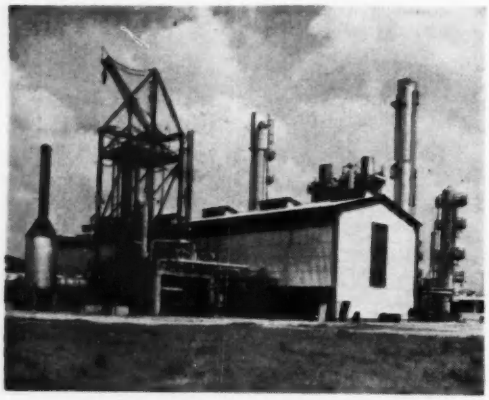
Chemical Age

PROGRESS AT I.C.I. POLYPROPYLENE PLANT
(page 161)

VOL. 83 No. 2115

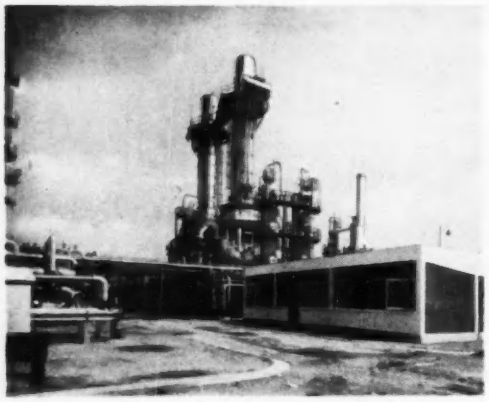
23 January 1960

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY



The Kellogg developed quench type synthesis converter with removable catalyst basket is located under permanent crane.

Interior of control house.



Control house with reforming furnaces in the background

AMMONIA PLANT

FOR

POTASSE ET ENGRAIS CHIMIQUES

BY

KELLOGG

At Grand Couronne this plant, which is built to the Kellogg steam reforming process design, combines nitrogen from the air and hydrogen from refinery waste gases to produce about 100 metric tons of ammonia each day. The anhydrous ammonia provides the nitrogen for a variety of fertilizers manufactured by Potasse Et Engrais Chimiques.

The process consists of three steps:

(1) preparing and generating the synthesis gases;

(2) purifying the synthesis gases;

(3) synthesising hydrogen and nitrogen to ammonia.

Of the many ammonia plants Kellogg has built, this is unique in that a provision is made to catalytically convert the carbonyl sulphide to hydrogen sulphide and simultaneously hydrogenating the olefins in the gas. In the purification stage the use of hot potassium carbonate solution for the removal of carbon dioxide is also unusual.

A detailed description of the Kellogg steam reforming ammonia process will be sent on request.

M KELLOGG W

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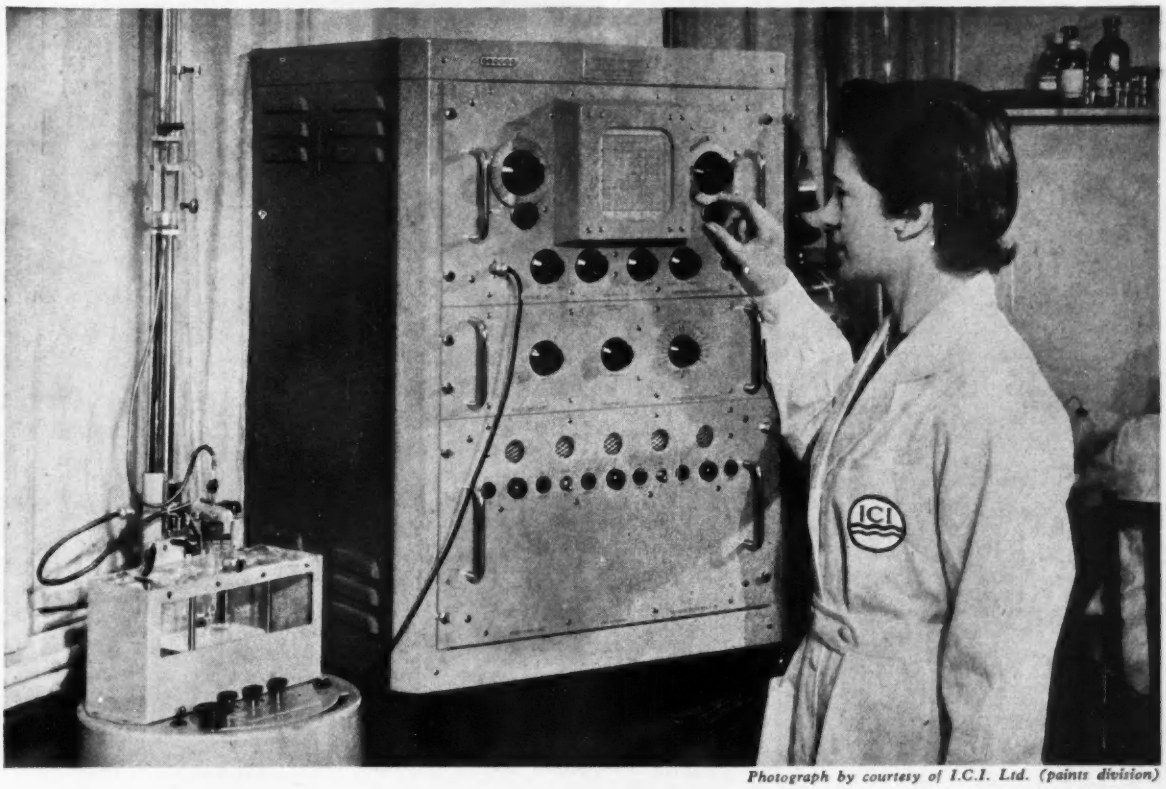
This is polarography — the easy way!



Photograph by courtesy of I.C.I. Ltd. (paints division)

Analysts all over the world have found how easy it is to get rapid and accurate analyses with our Cathode Ray Polarograph. It is quick in action, gives direct or derivative readings, and has that extra sensitivity you so often require.

Its easily readable peak polarograms repeat every seven seconds. Your laboratory is wasting expensive time without this indispensable instrument.

SPECIFICATION

DISPLAY. six-inch diameter cathode ray tube, with a 9cm. square graticule printed on its flat, long persistence screen.

VOLTAGE SWEEP. Rate: 0.3 volt per second (fixed). Range: 0.5 volt per sweep approximately (fixed). Start Potential: + 0.5 volt to -2.0 volts (variable). Sweep Time : One polarogram per mercury drop with seven second repetition.

PLATE ONE

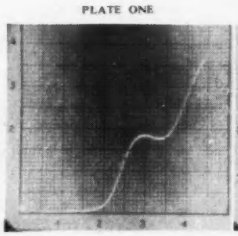
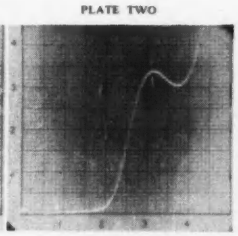


PLATE TWO



TYPICAL APPLICATION FOR CATHODE RAY POLAROGRAPH

Determination of Cyanide in Effluent Sample. Introduce 5 ml. sample into two 10 ml. volumetric flasks, into one flask add 0.2 ml. of a standard cyanide solution, (50 µg/ml. CN'), and make each up to the mark with 0.2N NaOH. Shake well. Transfer 5 ml. from each flask into polarographic cells, and de-aerate with nitrogen for 3 mins. Record the polarograms applying anodic oxidation on start potential –0.4V and scale factor 1.0.

x µg CN' + 5 µg CN' = 34 divisions (Plate 2)

x µg CN' = 18.5 divisions (Plate 1)

$\therefore$ 5 µg CN' = 15.5 divisions

$$x = \frac{5 \times 18.5}{15.5} \text{ µg}$$

$$x = 6.0 \text{ µg}$$

Volume of sample in cell = 2.5 ml.

$\therefore$ Concentration of CN' in sample = 2.4 µg/ml.

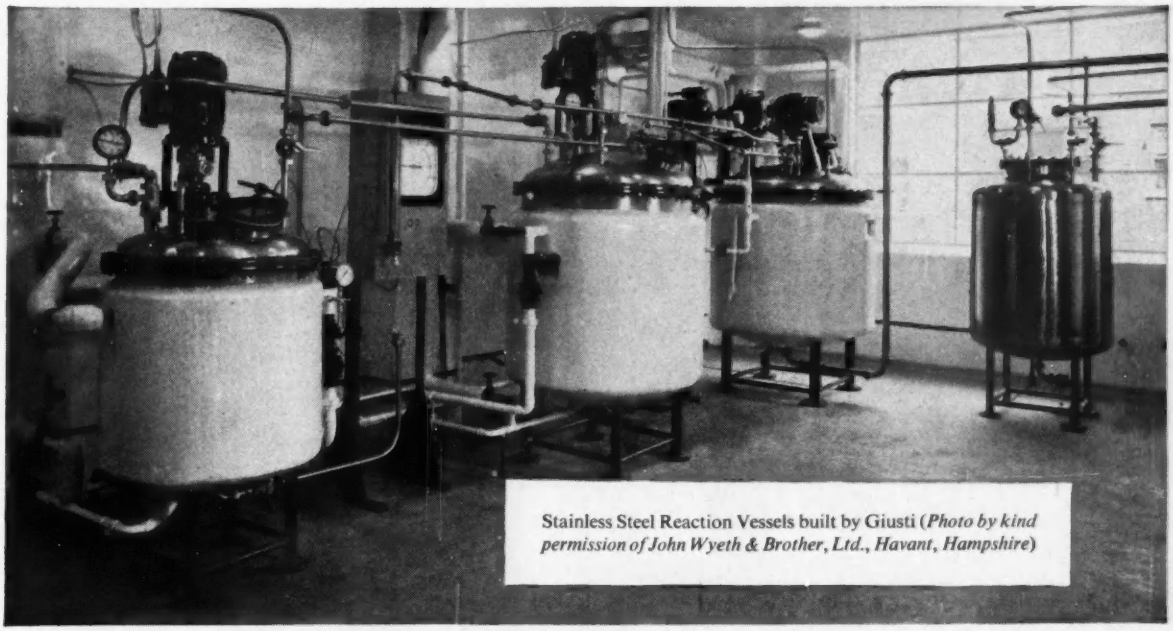
Send now for "Trace Techniques" just published containing 30 new polarographic methods. Price 25/- post paid. (U.K. only.)

SOUTHERN INSTRUMENTS

REPLY TO THE ANALYTICAL INSTRUMENTS DEPARTMENT SOUTHERN INSTRUMENTS LTD. CAMBERLEY SURREY ENGLAND. CAMBERLEY 3401

INDEX TO ADVERTISERS

The first figures refer to advertisements in **Chemical Age Directory & Who's Who,** *the second to the current issue*



Stainless Steel Reaction Vessels built by Giusti (*Photo by kind permission of John Wyeth & Brother, Ltd., Havant, Hampshire*)

HIGH EFFICIENCY— LONG-LASTING

stainless steel plant by

GIUSTI

Our experience of stainless steel fabrication has been built up over a generation. Practically no job is too specialised for us to produce quickly and at a competitive price.
Also Giusti quality *endures*—another point worth remembering when you next require plant or vessels—either from stock or to your own specification.

A recent photo of stainless steel sterilizers made by Giusti and supplied to the M.W.B. Bacteriological Laboratories 25 years ago. (*Photo by courtesy of the Metropolitan Water Board*)

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VOL. 83 No. 2115
JANUARY 23 1960

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CHEMICAL AGE

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IN THIS ISSUE

Annual subscription is: home, 52s 6d, overseas, 60s, single copies 1s 6d (by post 1s 9d)

FACTS ON PESTICIDES

LAST week we published the tribute paid by Mr. John Hare, Minister of Agriculture to the Association of British Manufacturers of Agricultural Chemicals (A.B.M.A.C.) for the responsible and co-operative way in which it had joined in negotiations to obtain the agreement by manufacturers of alkali arsenites to cease production of these haulm destroyers and weedkillers (CHEMICAL AGE, 16 January, p. 129). Thus withdrawal and cessation of manufacture is being carried out on a voluntary basis.

Adverse, and very often, ill-informed comments in the national press have continued without the manufacturers of agricultural chemicals offering any defence. However, chairman of A.B.M.A.C., Mr. George Huckle, last week made a statement (CHEMICAL AGE, *Ibid*) for the first time defending the manufacturers and pointing out that without crop protection chemicals and other agricultural chemicals, the world is faced with starvation for millions.

Now a manufacturer has come forward with a review of medical problems involved in the use of pesticides over the 10-year period 1950-1960. Speaking on behalf of Fisons Pest Control Ltd., the company's chief medical officer and director responsible for research, Dr. E. F. Edson, last week pointed out that the demand for chemical products to combat pest problems in agriculture was very large and was annually increasing. He emphasised that the core of the safety problem was that man's basic scientific knowledge did not yet permit scientists to devise chemicals which would kill or control pests without causing some risk to beneficial species.

This problem is not solely related to agricultural chemicals, however, for much the same problem occurs in medicine where almost every drug is capable of causing some adverse and possibly dangerous reaction while accomplishing its major task.

Difficulties facing the pesticide manufacturer are many. Selective control of pests is difficult due to the basic similarity in the ways in which pest and beneficial species grow and live. It is difficult to ensure safety in handling dangerous chemicals when users are apt to be inexperienced persons working under little or no supervision or knowledge, and in many instances under adverse conditions of climate and equipment. But agriculture has many dangers greater than those due to chemicals.

Illustrating the above point Dr. Edson mentioned that in the past 13 years there had been only one chemical casualty in British agriculture for every 150 due to non-chemical causes. It should be stressed also that about 80% of all the 'spraying' done in the U.K. is with virtually harmless hormone weedkillers. As an estimate, but based on a factual annual survey, use of the more poisonous sprays, Fisons report, is not greater than about 3% of the total sprayed acreage. The remaining 97% involves only materials which are not significant health risks among workers. In the 14-year period 1946-1959, only 13 cases of fatal occupational poisoning by pesticides occurred in Britain.

Few industries can be recalled as having appreciated the medical and safety aspects of rapid technical expansion so early as did the pest-control industry or having collaborated so well with users and the Government.

Some of the charges levelled against the industry were ably refuted by Dr. Edson. Charges that have been made are that the companies market poisons, that food is made unhealthy and that profits have been made through the ignorance of farmers. It has also been said that sometimes chemicals have been launched before being proved safe and that amenities of the countryside were being destroyed.

Frequently, the pesticides manufacturer finds that it is the failure of farmers to carry out the makers' instructions which results in accidents. Dr. Edson confirmed also that in the light of present medical knowledge there is no evidence to show that food is made unhealthy, and the countryside is still in good heart.

Economically it must be considered that the expenditure of some £20 million annually on chemicals to ensure at least a 10% annual increase in the sale value of agricultural produce in the U.K., which is running at a total of about £1,000 million a year, is a sound policy. One great need of the industry, however, is a detailed report on the actual benefits resulting from the use of agricultural chemicals. Recent successes in saving the sugar beet crop and in combating potato blight are first-class examples of benefits which are not sufficiently appreciated by the public.

There are about 80 other countries which manufacture (or import) and use pesticidal chemicals. They have adopted no set of standards of protection, because there is and probably can be no standard defensive systems which would satisfy the different circumstances in, say, Canada and Chile, France and the Philippines, Ireland and India. A recent Board of Trade international enquiry, instigated at Fison's suggestion, has shown that the majority of countries either have or shortly propose to have some organisation and requirements for the declaration of toxicity or hazards of a new product. These official needs which are very varied in their demands at present, will no doubt become steadily firmer.

There is no published information on the rejection of efficient yet dangerous chemicals by manufacturers at the research stage because they are too poisonous to be used, but there is little doubt that manufacturers do reject such chemicals. All manufacturers of pesticidal chemicals have long been aware that a dangerous pesticide, even though cheap and efficient, is a bad product, both from moral and practical aspects. The moral aspect is obvious and the practical aspect is that it costs so much to discover and introduce a good new product that those development costs must be covered by large sales. Annual research and development budget for the Chesterford Park Research Station of Fisons Pest Control in 1960 is £237,000 and has been of that order for several years.

Besides careful assessment of pesticide products and rejection at any stage, if circumstances so indicate, manufacturers issue detailed safety precautions when marketing toxic chemicals, they colour dangerous but colourless products, add 'smelling agents' to odourless types, and have devised safer types of packages, containers, formulations, seals and pouring devices, etc. The manufacturers' biggest problem still lies, however, in making sure that users do in fact bother to heed the recommendations and advice.

In the meantime, with the research and development and medical departments building up valuable information, producers of pesticides are in a better position today than at any time before. Gradually, as more information is collected, the lack of basic knowledge, which has resulted from the rapid development of pesticides, is being overcome. Still better products and better techniques can then be developed than exist today.

Time, however, is required, but there can be no doubt that pesticide manufacturers will continue to pursue their present careful policies for safer use of their products. At the same time, the general public must be kept informed of the valuable contribution that these products make to our well-being and living standards.

PROMISING COMMERCIAL POTENTIAL FOR DIALDEHYDE STARCH

RECENTLY in operation in the U.S. is Miles Chemicals semi-commercial plant for making dialdehyde starch. This new chemical is starch oxidised by periodate ion. The process, discovered by the U.S. Department of Agriculture in their Northern Utilisation Research and Development Division, Peoria, Illinois, produces breaks in the carbon-to-carbon bond between C_2 and C_3 of the starch molecule's glucose units forming dialdehyde units, so rupturing the anhydroglucose rings of starch. Starch-splitting enzymes, e.g. β- amylose, are reported as not affecting dialdehyde starch if more than 80% of the glucose units are oxidised (and any desired number of units can be oxidised from 1 to 100%). It is sometimes called a polymeric dialdehyde.

A modified U.S.D.A. process is used by Miles Chemical, a division of Miles Laboratories, Elkhart, Indiana, who operate under a U.S.D.A. licence. First step is the production of periodic acid from elemental iodine in an electrolytic cell. The acid is then used in the second step to oxidise starch and iodate is recycled to the cell. In scale-up operations both U.S.D.A. at Peoria and Miles found that the original 'in-cell' oxidation was unworkable. Also licensed to make dialdehyde starch are Abbott Laboratories, North Chicago, Illinois. As yet, the company admits to having made limited quantities for testing purposes.

Up to 1,200 lb. a month has been produced by Miles in a pilot plant, selling price being $1.50/lb. Capacity of the semi-commercial plant is 250,000 lb. a year and this can be doubled in 60 to 90 days, if necessary. The new price is $1.00/lb. and with expansion of use, it is hoped the price will drop further. A price of 30 to 40 cents/lb. or even less is possible at the multi-million lb.-a-year level. Miles indicate.

Uses for dialdehyde starch (Miles' trade name for which is Sumstar) include tobacco applications, adhesives and binders, films, coatings, paper and textiles. Earliest full-scale commercial use for this polymeric dialdehyde is expected to be for the formation of tobacco sheets for wrapping cigars. Dialdehyde forms cross-linked, water-resistant films with methyl cellulose and similar cellulose ethers and American Machine and Foundry have developed a process (U.S. Patent 2,887,414) for making tobacco sheet based on periodate oxidised starches and tobacco particles.

Because dialdehyde starch reacts with polysaccharides and proteins, the product is thought to have considerable promise in the adhesives field. Miles report that the compound gives water-resistance to films made from natural gums. In the tanning field, use of dialdehyde alone produces softskin leather, or it can be used as a pretanning agent for sole leather, reducing the time required for subsequent tanning operations. Reason for its usefulness is that the compound reacts with amino and imino groups of polypeptides, such as collagen in animal hides.

In paper-making this polymeric aldehyde is described as a useful adjunct to existing chemicals, giving both wet and dry strength to paper. Wet strength initially is higher than that obtained with commonly used melamine-formaldehyde resins, it is claimed, but after three or four hours of water-soaking is diminished. Other potential uses suggested for dialdehyde starch are: in protective coatings—as an adjunct in some emulsion paints; and in solubuliser for polyhydroxy-compounds.

Project News

By-product Capacities at Spencer Works

● BY-PRODUCT plant capacities at the coke ovens to be installed at the Spencer Works, Newport, Mon, by Simon-Carves Ltd., will be 650-700 tons a week of tar, 4,500 to 5,000 gall. a week of crude benzole, and 150 tons a week of sulphate of ammonia. The contract, one of the largest placed in the U.K. in recent years for coke ovens, was announced early in the new year (see 'Project News,' 9 January, p. 79).

● A CONTRACT worth £70,000 has been awarded to Head Wrightson Iron and Steelworks Engineering, a subsidiary of Head Wrightson and Co. Ltd., for provision of two Kaldo and two L.D. oxygen steel-making units for Consett Iron Co. Ltd., of County Durham.

These are scheduled to go into operation at the end of 1960, and will produce annually some 750,000 tons.

● Two new contracts for Richard Thomas and Baldwin's Spencer steelworks have been announced, each worth £2 million. Sinter plant will be supplied to Lurgi Apparatebau-Gesellschaft specification and manufactured in the U.K., the main British firm involved being James Howden and Co., who have concluded an agreement with the German company.

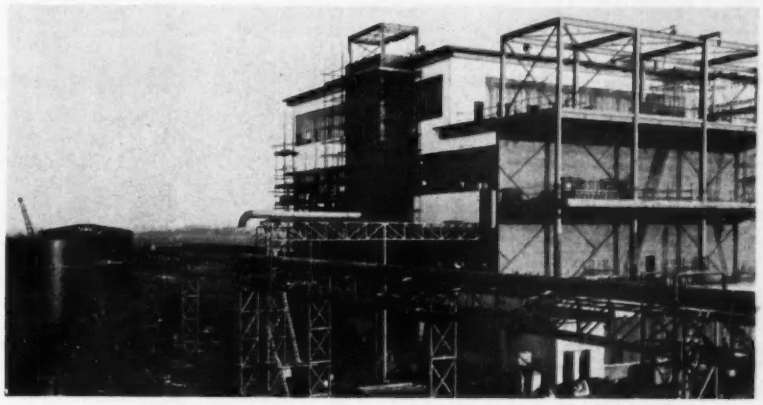
● The Mersin oil refinery, South East Turkey, will have a capacity of some 3 million tons a year and is expected to be commissioned in the latter half of 1961. The initial plant at the refinery will include a distillation unit, a catalytic reforming unit, and a kerosine desulphurisation unit. Motor spirit, kerosine, diesel and heavy fuel oils will be produced. Two jetties capable of handling simultaneously two tankers of up to 50,000 d.w. tons each will be built and there will also be a barge wharf.

● IN connection with contracts placed for the construction of a new oil refinery in Brazil for Petrobras Duque de Caxias, A.E.I.-Birlec are to supply through Brefcon Ltd., two absorption dryers and an inert gas generator of 15,000 c.f.h. capacity The dryers are to be used for drying 50 U.S. gall. a minute and 100 U.S. gall. a minute respectively of liquefied petroleum gas. The plant is being built to the specification of Foster Wheeler Corporation, the design, engineering and construction contractors for the new refinery.

C.I.B.A. Fellowship Awards

Founded for the purpose of furthering exchange of ideas between scientists in the British Isles and the Continent, the C.I.B.A. Fellowship Trust will award several fellowships for the academic year 1960-61. These will be for tenure at Continental universities or institutions for research in chemistry, physics and allied subjects. Further details of the awards from the secretary of the trust, C.I.B.A. (A.R.L.) Ltd., Duxford, Cambridge.

RAPID BUILDING SPEEDS ON-STREAM TIME FOR PROPATHENE



Progress on I.C.I.'s polypropylene plant at Wilton, where the buildings are now ready for the installation of process equipment

REPORTS from chemical engineers working on the construction of I.C.I.'s new polypropylene plant at Wilton, Yorks, indicate that this 10,000-ton capacity plant will be on stream towards the end of this year. It had previously been expected that the plant would not be ready before 1961, but rapid progress made during 1959 by the main contractors, Constructors John Brown Ltd. (as noted in CHEMICAL AGE, 2 January, p. 9) means an earlier on-stream time. The site is now fully developed, roads have been made and buildings completed ready for the processing equipment to be installed.

I.C.I. believe that their Propathene plant will be the first commercial scale polypropylene plant to come into operation in this country; this was also indicated in our issue of 2 January. It is being built in a way that will allow for rapid expansion.

Catalysts Unit

Alongside the plant for the synthesis of Propathene, I.C.I.'s Plastics Division will produce organo-aluminium compounds in bulk for use as catalysts in the process. The production of these complex chemicals presents a number of technical difficulties but the I.C.I. chemical engineers responsible for the development report excellent progress.

The company first announced plans to extend its polyolefin activities in April last year, following the signing of an agreement whereby I.C.I. acquired a licence under the Montecatini and Montecatini/Ziegler U.K. patents covering the production and use of this new plastics material, originally discovered by Professor Guilo Natta.

Since May 1959 the company has been selling Propathene in order to develop the market and the response it is reported, "has been most satisfactory". The polymer has been successfully evaluated for a wide variety of applications, many of them entirely novel. Adequate supplies of Propathene are available from a pilot plant for these and any future uses which can be developed. The full resources of I.C.I.'s research and technical service are being utilised for development work on Propathene and much of this work is being carried out in collaboration with I.C.I.'s customers.

Propathene is particularly suitable for moulding uses as it has greater rigidity and temperature resistance than other polyolefins. It is also expected to find extensive use in film form and as a general extrusion material. Propathene is now available in the form of coloured compounds as well as natural polymer.

The company states: "The bulk quantities of polypropylene available in 1960 under the I.C.I. trade name Propathene, together with the wide range of I.C.I.'s high-pressure polythene (Alkathene), will meet all the requirements of customers using polyolefins."

A. and W. Group Order 10,000-ton Phosphate Ship

A MOTOR cargo vessel of 10,000 tons to carry phosphate rock to the factories of the Albright and Wilson Group has been ordered from the Burntisland Shipbuilding Co. by A. and W. (Overseas Developments) Ltd., an A. and W. company.

Many thousands of tons of phosphorus derivatives are used every year in this country. Albright and Wilson (Mfg.) Ltd., the largest production unit in the U.K. of this international chemical group, produces phosphorus at Oldbury, near Birmingham, and at Portishead, near Bristol. Phosphate rock is imported largely from Florida and North Africa. The vessel has been designed to discharge at Portishead and will be suitable for loading ports Tampa Range (Florida) and elsewhere.

★ THE name of the late Sir Ernest Benn, that leader in the cause of liberty, will be well known to many of my older readers, not only for his championship of the freedom of the individual and freedom in trade, but also as the founder of CHEMICAL AGE in 1919. The new biography of Ernest Benn (reviewed in p. 164 by Sir Linton Andrews), deals with his life-long campaign in the name of liberty—a campaign that encompassed two world wars.

The book recalls the defection of Ernest Benn and Alfred Mond (later Lord Melchett) from the Liberal Party in 1929—Mond to embrace Empire free trade and to join the Tories, Ernest Benn to remain steadfast in his individualism but to vote Tory at the 1929 General Election.

It is worthwhile noting that what Sir Ernest Benn's new protegy had to say on free trade in its second issue (CHEMICAL AGE, 28 June, 1919), is as true to-day as it then was. A leading article declaimed: "The health of British industry cannot really be guaranteed by any artificial devices [trade barriers]; in other words we cannot make up for inefficiency within by any exterior contrivances. Whatever fiscal readjustments may come, the real security for British industry must always lie in its own vitality and power of production. In a word, the quality and quantity of our output must at least equal the best of competitive nations."

★ TESTIMONY to the good recovery that British industry has made from the mild recession of 1958, comes from the Labour Exchanges. Recently, Mr. G. Hardman, of I.C.I. told the North-West Regional Board for Industry at Preston of the difficulties that the company's works at Thornton near Fleetwood has been having in recruiting labour. Although there were 732 registered unemployed in Fleetwood and Thornton in December, the company still found that it took two months to replace personnel.

He thought the unemployed must be incredibly unsuitable if positioning them was the difficulty. He was told, however, that placing unemployed in positions was the main difficulty for there were 1,389 vacancies in the area.

★ QUITE a lot of interest has been shown in U.S. petrol additive circles following Socony Mobil's claim that tetramethyl lead is a better antiknock agent than tetraethyl lead (CHEMICAL AGE, 9 January, p. 80), Socony, I learn, have filed a patent application covering TML, and plan to seek approval from the U.S. Public Health Service. TML, Socony say, solves antiknock problems encountered with some high octane gasolenes having a high aromatic content better than TEL.

E.I. Du Pont de Nemours have also investigated TML, have developed a manufacturing process and are considering plans for commercial production. Ethyl Corporation have also studied TML. They report that they can supply the compound by modifying existing TEL facilities. Ethyl say, too, that they have filed patents.

In the meantime Esso Research and Engineering report that they have a patent (U.S. 2,310,376) on TML and other lead alkyls issued in 1943 which covers their use in eliminating knocking.

★ I HEAR that in an investigation of mechanisms of laboratory radiation-induced reactions of cotton cellulose at a U.S. Department of Agriculture it was observed that massive dosage of high-energy gamma radiation produced major structural changes in the cotton cellulose molecule, while at lower dosages the changes were small. The next logical step in the investigation was to polymerise acrylonitrile monomers by radiation on to cotton.

Significantly perhaps there was only a small decrease in breaking strength of fibres which, as examination under electron microscope revealed, had been penetrated by the polyacrylonitrile, located at the inner part of the cell wall and extending completely round the lumen of the fibre—while a significant increase in elongation at break was evident, in addition to a decrease in stiffness of the fibres.

★ I.C.I. AND their predecessors have had offices at Winnington, Cheshire, since 1872 when Lugwig Mond, John Brunner and the Manchester engineer Charles Holland bought Winnington Hall and Park, a Regency mansion that was sadly decaying. Mond and Brunner shared their first office—in one of the stable stalls; a cowshed became a clerk's office.

That crude accommodation is a far cry from the new Alkali Division offices (see p. 176) that were opened at Winnington by Sir Alexander Fleck on 15 January. The decision to build new offices at the Ley, a late 18th century house and surrounding acres, was taken in 1949. I.C.I. main board sanctioned expenditure of £900,000 and the Ley was demolished to make way for the new Brunner House in January 1958.

The new offices will house some 700 to 750 of headquarters staff and wherever possible materials produced by I.C.I. have been used in construction. Model techniques were used not only to determine layout but also to illustrate alternative aesthetic treatment of the exterior. Alkali Division directors fought shy of what they termed 'ultra-modern' architectural treatment because it would not be in keeping with local traditions.

★ BID of Aspro-Nicholas for E. Griffiths Hughes Proprietaries would obviously diversify Aspro-Nicholas pharmaceutical interests still further. Apart from giving them control of the Griffiths Hughes interests in proprietary products, such as Kruschen Salts, Kwells and Rennies, and the soap activities of J. and C. Field, they would also acquire British Schering Ltd.

It is not well known that British Schering were acquired by Griffiths Hughes in the early days of the war, the company then being the London subsidiary of Schering AG, Berlin. Like their original German parent, British Schering produce a wide range of ethical pharmaceuticals, including sex hormones. Other products are the barbiturate Medinal, Oblivon sedative and hypnotic, the antipeptic ulcer preparation, Neutradonna and Vasano for travel sickness.

I understand that acquisition of Griffiths Hughes would tie-in with the future plans of Aspro-Nicholas.

★ THE world's first titanium-clad pressure vessel of commercial size has proved a complete success according to Chicago Bridge and Iron Co. It was built early this year for a West Coast petrochemical firm, and has now withstood many months of strenuous service. The company is now prepared to build titanium Hortonclad vessels on a commercial basis for the chemical, petrochemical, paper and other processing industries.

The titanium-clad vessel installed in California was designed for a working pressure of 150 p.s.i. at 500°F. It measures about 4 ft. in diameter by 12 ft. high and was fabricated from plates of ½-in. mild steel clad with 5/64-in. and 7/64-in. grade A-40 titanium. Hemispherical heads, top and bottom, each were welded from pressed segments. Fittings and flanges were titanium-lined.

★ FOUR scientific representatives of the Russian Trade Delegation who arrived unexpectedly at Birmingham University in August 1958 to attend the international symposium on microchemistry ('Distillates', 6 September, p. 408) did not waste their time. While at the symposium and exhibition, of which they stated "What we have seen is of a very high standard and very modern", they saw demonstrations of Griffin and George apparatus for gas liquid chromatography.

Later they visited the company's laboratories and as a result of what they saw, the Soviet Trade Delegation has now placed an order worth £16,000 for 13 gas-liquid chromatographs with Griffin and George. This is the second order from Russia during the last 12 months, the first being for six instruments.

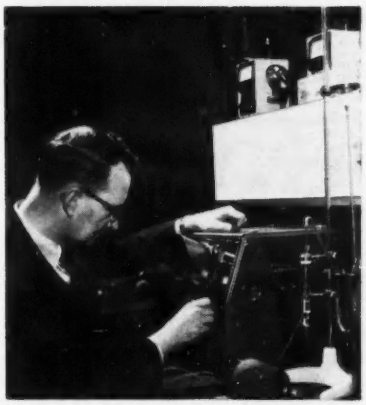
Alembic

NEW LABORATORY WARE SHOWN AT MANCHESTER R.I.C. EXHIBITION

THE annual exhibition of Chemical Laboratory Apparatus and Techniques, organised by the Manchester and District Section, Royal Institute of Chemistry, was held on 7 and 8 January at the College of Science and Technology, Manchester. There were some 33 exhibitors.

At this year's exhibition the organisers used star-shaped 'New Exhibit' labels on those items which were said to be new.

Baird and Tatlock (London) Ltd. displayed a new automatic proportioning



On the Nash and Thompson stand, E. Hewett, sales engineer, demonstrates the Kova polaroscope, developed by Professor J. Heyrovsky

pipette of the peristalic pump type. The essential feature of the pump is that it consists of a flexible tube, made of silicone rubber, compressed by rollers moving along it, thus causing fluid to flow in the direction of the rollers. The flexible tube lies in a circular recess and is clamped at its ends, where it is joined to polythene intake and delivery jets. There is thus a constant volume of liquid. It dispenses 0.3 of an ml. and the accuracy is plus or minus 1%—i.e. to 0.003 ml. for a 0.3 ml. tube. (See also CHEMICAL AGE, 16 January, p. 137).

At the stand of *Electronic Instruments Ltd.* was a direct reading fluorimeter, measuring small differences in solution concentration by fluorescence. As an example, it will detect two parts in 10^{10} of quinine sulphate in a solution.

Orme Scientific Ltd., Manchester 1, showed a selection of instruments made by leading manufacturers of laboratory equipment, as well as general apparatus and equipment. These included a 'super centrifuge', manufactured by Martin Christ, working at 15,000 r.p.m. and 20,000 g.

At *Quickfit and Quartz Ltd.* a new assembly was on show, devised by J. Leurquin, which is said to have marked advantages. Main ones are that very small quantities may be estimated accurately, and heating and cooling for distillation are avoided. Other new apparatus included a large size lyophiliser and trap now included in the Quickfit range.

The company has also added to its range of extractors, and the latest of these was a cold Soxhlet extractor of 60 ml. nominal syphoning capacity together with four conventional Soxhlet type extractors of 4.25 and 600 ml. and 2-l nominal capacities.

At the stand of *Nash and Thompson Ltd.* were two exhibits of particular interest—a serological dispenser and a polaroscope of Czech manufacture. The automatic dispenser for multiple titrations is designed to accelerate and facilitate the normal serological and other testing methods which involve repetitive titrations. Twelve tests can be done simultaneously in the same or less time required for a single test by normal methods.

The Kovo polaroscope, priced at £350, features comparative titration and mechanical drop-time controller.

Townson and Mercer Ltd. showed a new desiccator cabinet with a glass fibre body. Used glass fibre enabled the constant humidity cupboard to be manufactured at lower cost; lighter in weight, it is also very strong. Price of a cabinet without fan is about £36 7s and with circulator fan, £42 8s.

Evans Electroselenium Ltd., through their representatives, *A. M. Lock and Co. Ltd.*, Oldham, showed among other equipment the new Spectra absorptiometer. This has application in agriculture, sewage works, medicine, food, brewing, water treatment and so on. It is said to be the first instrument of its kind in this country to use a continuous spectrum wedge.

Cambridge Instrument Co. Ltd. showed new models of gas analysers, and a range of their existing equipment.

On the stand of *Orme Scientific Ltd.*, Sartorius-Werke AG, Gottingen, displayed the new Sartorius torsion balance, which has the advantages of rapid weighing and a long direct reading projection scale. The accuracy of this balance is said to be unaffected by temperature variations and can thus be used in surroundings not air conditioned. The price is £175.

Glaxo to Reduce Working Week

For male factory workers the working week at Glaxo Laboratories will be reduced from 44 to 42 hours, and for clerical and technical staff from 40 to 38. Women manual workers already have a 40-hour week and this will be unchanged. In addition salaries and wages will be increased by about 5%. An extra week's holiday will be given according to salary and length of service. Total cost of the proposals will be about £150,000 a year.

Top, left, F. J. Heath, sales manager of the Tintometer Ltd., demonstrates an artificial light cabinet for use with Lovibond comparators; right, R. L. Fenwick, sales manager of Quickfit and Quartz Ltd., shows the new Leurquin nitrogen determination assembly. Bottom, left, Spectra absorptiometer, first of its kind in the U.K. to use a continuous spectrum edge, is demonstrated by S. J. Boxall, sales promotion manager of Evans Electroselenium Ltd.; right, Dr. F. Hugh-Jones (Hudes Merchandising Corporation), left and Edward Beer (Sartorius-Werke AG) inspect the sedimentation balance

A LEADER IN THE CAUSE OF LIBERTY

Sir Linton Andrews Reviews 'Ernest Benn: Counsel for Liberty'

HERE is a book* about an enthusiast by an enthusiast. Sir Ernest Benn fought valiantly for the freedom of the ordinary man. Nothing pleased him better than to withstand the folly of officials armed with the power of the State. For about thirty years he stood in the forefront of reformers, hacking to pieces the obscurantist sophistries of those who would take away the rights of the common man.

He once wrote in his diary: "I am known as a crank, as unbending, uncompromising, unwilling to be practical, as the exponent of a faith which is unpopular." He may have seemed a crank, at least for a time, to some. Most reformers have had to live down such a stigma.

Ernest Benn lived to see his attacks on unimaginative planners and tyrannical bureaucrats upheld by an increasing and formidable number of citizens. He was, in the words of Dr. John Murray, a discoverer of truth for himself and the guide and prophet of others. What he did for the tyrannised citizen and for the control of the controllers and how he achieved many victories, especially by winning over public opinion, richly deserved the monument of a biography. Here is what his friends have longed for, a lucid and attractive record of what he did as a champion of liberty, a book imbued with the trenchant power of his own personality.

Discrimination

The work of biographer was entrusted, with much material, to Mr. Deryck Abel, who for a time was in daily touch with Ernest Benn's crusading. He has achieved his task with scholarly discrimination. This is not, like so many memorial biographies, full of panegyric, but is a straightforward, well-attested account of what one man did for liberty in years when it was often in peril.

Mr. Abel does not tell the full story of his subject's life. His sub-heading, 'Counsel for Liberty', describes his purpose—to tell of a great chapter in libertarian history and the part played in it by one who excelled in wise advice and leadership. But by way of a foreword there is an excellent biographical introduction by Ernest Benn's son, Sir John Benn, who sketches briefly the development of the great Benn publishing enterprises and tells how from his earliest years Ernest breathed the atmosphere of politics and public affairs.

During the First World War, Ernest Benn's experience in and with Government departments fostered his impatience with the ways of bureaucracy and the appalling waste in the filling up of forms. It was his book, 'The Confessions of a Capitalist', that made Benn famous to the general reading public. Abounding in vitality, he strongly resented the crippling effects on business of the increasing powers of the State and the reckless use of public money. He had the grasp of practical wisdom which Aristotle pronounced to be essential to a politician. He felt strongly and he wrote and spoke strongly. Not for him were the crafty compromises of politics. The word 'cannot', said Cuthbert Bardsley, now Bishop of Coventry, was not to be found in his dictionary; nothing for him was impossible.

Some of us at times made fun of his enthusiasm, which occasionally ran to extremes, as indeed did his hero Cobden's, but we had a wholesome respect for this man with a mission, this defender of individual liberty.

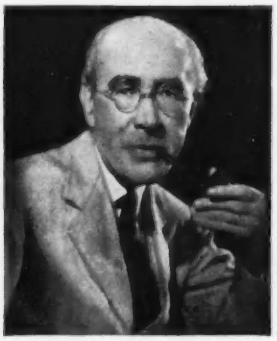
Sir Hugh Bell

Mr. Abel tells the story well of Benn and his friends of like faith, notably Sir Hugh Bell, the great Yorkshire steelmaster, for some years joint leader with him of the Individualist movement, and Collin Brooks, who began with the Benn papers the career that was ultimately to bring him to the *Yorkshire Post* and later to the ownership and editorship of *Truth*.

There were many other people who rallied round. Like attracted like. The Society of Individualists drew many champions of liberty. Critics might say—I was one who did—that its name was a contradiction in terms like a quarterly conference of hermits, but everyone knew that no crusade could succeed unless valiant enthusiasts united their forces.

Mr. Abel gives us plenty of quotations. We can almost hear in them the voice of our old friend. He could be forthright and epigrammatic, almost a Bagehot or a Keynes in pungent reasoning. If you read the appendices, one a speech on the need for economy and the other a pamphlet on the profit motive, you will quickly see why Ernest Benn could hold with equal skill an audience or the readers of is pamphlets. In his speech on economy he began by quoting what President McKinley once said when asked to give a message to the nation: "What this country needs is a good five-cent cigar". Ernest Benn, in very different circumstances, said: "What this country wants is twelve-pennyworth for a shilling". He defined economy as value. He said the essence of economy was that the individual must decide for himself, not for anybody else or anybody else for him.

One of Ernest Benn's books that both pleased and slightly provoked me was 'This Soft Age: With the Optimistic Theory of the 30-50 Men'. In it he said



The late Sir Ernest Benn

the Victorian wanted work. The Georgian of 1933 spoke of employment, by which he meant that he wanted wages. This was true of many people. But what struck public attention was the theory in the book that since 1914 the nation had been deficient in that measure of vigour, strength, experience, sanity and judgment which ordinarily resided in the 30 to 50 men. The younger men coming along, untouched by war service strains and tensions, would help to curb, Benn thought, the extravagant ideas and ideals of the war-soiled and inefficient.

As one of the war-soiled, with a scarred face, I could not help contesting this theory on behalf of old comrades. I wrote in the *Leeds Mercury*: "Those of us who are rather battered survivors of the War will be happy indeed if young breadwinners come along to set the world right. They can do their part, but the old fogies are still able to help a bit. I cannot agree (though I am in the 30-50 class myself) that the war reduced the generation of those old fogies to a crown of defectives. Nor can I agree that the new generation will possess all those fine qualities enumerated. . . . How can they, when some of them have suffered so bitterly and been exposed to the dangerous influences of so much unemployment?"

It must not be thought that Deryck Abel's book is given up entirely to political and economic argumentation. There are plenty of illuminating references to famous men, notably Neville Chamberlain, Winston Churchill and the second Viscount Leverhulme, and some cheerful anecdotes.

Between the lines we can discern what a fine business sense, just as characteristic of the Benn family as their love of liberty, Ernest showed in all his doings. In that respect he had perhaps gained by his study of Burke, Pitt and Cobden, economists of the highest distinction but poor at handling their own financial affairs.

I strongly recommend this book to those who are interested in a man of singularly attractive character and persuasive force. It illuminates an outstanding personality and enlightens the British process of forming public opinion.

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* *'Ernest Benn: Counsel for Liberty' by Deryck Abel. Published this week by Ernest Benn Ltd. (Pp. 192, 21s). Sir Linton Andrews is editor of 'The Yorkshire Post'.*

FISONS–ALBATROS PLANT AT SASOLBURG

Aerial view of the sulphuric acid plant

New Fertiliser Works Serves Large South African Farming Area

ON a 44-acres site in the Orange Free State, South Africa, and adjacent to what is known as the 'maize triangle' where more fertiliser is used than anywhere else in the Union is the new fertiliser works of Fisons Ltd. and Albatros Superfosfaatfabrieken of Utrecht, Holland, who each have a 50% share interest in the South African company, Fisons (Pty.) Ltd. As the nearest competitors are at least 400 miles away from this area, Fisons are able to provide a noteworthy service.

Fisons' plant at Sasolburg is designed to produce annually: 75,000 short tons 100% sulphuric acid, 200,000 short tons superphosphate and 112,000 short tons granular compound fertilisers; and it has been so laid out that all sections can be considerably extended without in anyway altering the original flow plan.

Raw Material Handling. Three separate discharging plants are provided for handling incoming raw materials received by rail. They handle respectively: rock phosphate, sulphur and sulphate of ammonia, and potash. Each plant is linked to an overhead conveyor system which carries the material to storage and the total length of these conveyors exceeds one mile. The rock grinding plant comprises two Bradley Poitte 12a mills, each having a grinding capacity of some 20 short tons an hour. Provision has been made for installing a third mill and, if ever necessary, a primary rock crushing plant.

A 70-tons/hour Broadfield acidulating unit is installed in the superphosphate plant. Rock is fed to it by a Simon Patent Constant Weigh Feed and acid through a Fischer Porter Flow Control. The Simon-Carves contact sulphuric acid plant is of the most modern design and has already proved capable of producing above its designed capacity, Fisons report.

Fertiliser Production. Granular fertilisers containing less than 1% moisture are produced in the granulating plant which has a rated capacity of 20 tons an hour. A 40-ft. high building, it has most of the plant installed on one deck 20 ft. above floor level. A feature is the chain grate stoker which permits low grade coal, obtainable from a nearby colliery, to be burned in the dryer furnace. The main granulating circuit is a simplified 'green arrow' with separate granulation of fines in an Eirich mixer.

Packing Section. Housed in a centralised tower is the packing plant which consists of four separate 30 tons/hour units each fitted with two belt fed weighers. Two of the units are equipped for filling 100 lb. valve-type paper sacks and two for open-mouth paper sacks. Products from each unit drop on to separate conveyor systems which carry them direct to railway trucks or farmers' lorries.

Storage Facilities. Materials are brought into the various buildings by overhead belt conveyors and recovered by mechanical shovels. Storage capacities of the buildings are as follows: sulphur 10,000 tons; phosphated rock 30,000 tons; superphosphate 30,000 tons; sulphate of ammonia, muriate of potash 10,000 tons; compounds 30,000 tons and bagged raw material—a total of 114,000 tons. Storage for 4,500 tons of sulphuric acid is also provided.

Water System. Raw river water for use in processes is pumped six miles from the Vaal River to the reservoirs of the adjacent Sasol plant, from whence it runs by gravity through a 1¼-mile long main to the Fisons water treatment plant. In this plant it is treated with lime, ferrous sulphate and acid to remove the suspended solids, correct the pH, and render it fit for use. Present capacity of the water treatment plant is 1 million gall./day. Neutralisation plant treats liquid effluent coming from the superphosphate plant wash tower and transforms it to an insoluble powder which is then dumped about two miles from the factory. Sewage is pumped one and a half miles to the sewage disposal works belonging to Sasol.

Laboratories and Services. A laboratory block containing two separate laboratories has been provided. One is used for routine production tests and the analysis of raw materials and finished products. In the other, soil samples, sent to the advisory department, are analysed.

All types of repair can be carried out in the well-equipped workshops and large stores carrying a range of essential spares serve them.

As previously all fertiliser factories in South Africa had been erected at the coast much investigation was required before a decision could be taken to erect a factory some 400 miles inland. Responsible for the planning and administration of the entire factory was Mr. B. W. Mills, works director of Fisons (Pty.) Ltd., who was assisted by project manager, Mr. J. H. S. van Zyl. Fisons Ltd. acted as the technical consultants, with Mr. J. J. Porter of the U.K. company giving assistance on technical matters and planning. Valuable contributions were made by Mr. R. F. Miles, Mr. J. B. Hayes and others at Felixstowe.

Preliminary investigations began as early as 1954, and planning for construction commenced in 1956. Work on the site started in June 1957 and all sections of the plant were producing to their rated capacities by the 9 June 1959.

The design team, Mr. Mills remarks, were given a very tight budget but despite this the capital cost came out inside the estimates. The project was also completed ahead of target. It is noteworthy that 85% of the money was spent in South Africa and most of the plant was fabricated by South African engineering

Granulating plant at Sasolburg

concerns to Fisons instructions. The only overseas expenditure was for specialised plant and equipment, such as catalyst for the sulphuric acid plant and the large 600 h.p. blower.

The Durban drawing office was responsible for layout of the factory, railway sidings and roads, etc., and also handled the detailed design of the packing, granulating, materials discharging plants, and conveyors. Workshops and stores are based on those at Immingham and Stanford-le-Hope, but the neutralisation plant is unique, having been developed by the Technical Development Section at Felixstowe and engineered by Fisons, South Africa. The waterworks was designed by the South African consultants in consultation with Mr. Mills and Mr. Porter.

Technical advice regarding reinforced concrete work and foundations for the main plant and storage buildings was provided by Mr. Miles, since a layer of clay which expands when wet exists just below the surface and above the underlying rock formation. The buildings have therefore had to be anchored to the rock formation, which was accomplished by sinking 1,600 bored piles with wide bases to an average depth of 10 ft. into the rock.

Installation of machinery and plant (other than electrical) for the materials handling, packing, granulating, neutralisation plants and workshops were undertaken departmentally under supervision of the resident engineer, Mr. D. W. Osborne.

Pressure-drop Data for Vertical Flow of Air and Water Mixtures

CO-CURRENT flow of gas-liquid and vapour-liquid systems has been studied for some time in connection with petroleum production and refining operations, steam generation and the performance of climbing-film type evaporators. A number of investigations have been published dealing with the flow characteristics, pressure-drop and heat transfer rates to two-phase vapour-liquid systems flowing in heated horizontal and vertical tubes. Such studies, carried out by J. A. R. Bennett (*A.E.R.E.* CE/R 2497), however, were necessarily complicated by the progressive evaporation of the liquid phase and the consequent increase in vapour velocity as the two-phase mixture passed through the heated tube. Hence a considerable amount of work has been carried out under isothermal conditions using gas-liquid systems, such as air and water, where the individual superficial phase velocities were independent of the length of the tube.

In the nuclear power field H. R. C. Pratt and J. D. Thornton (Proc. 2nd. Int. Conf. on Peaceful Uses of Atomic Energy, Geneva 1958 U.K. Paper 15/P/1451 and Patent App. No. 15130/57) have proposed the case of two-phase gas-liquid and vapour-liquid systems as coolants for nuclear reactors and have discussed the possible applications of a steam-water system operating in the liquid-dispersed region. This type of flow, note Bennett and Thornton, in a paper presented at a meeting of the Institution of Chemical Engineers held in London on 5 January, is an extension of the well-known annular or climbing-film regime encountered in climbing-film evaporators and may be produced by increasing the vapour velocity until most of the liquid film is entrained in the vapour-phase in the form of micro-droplets.

Such two-phase systems are considered to offer a number of possible advantages over single-phase liquid or gaseous coolants and the present paper describes a preliminary investigation into the pressure-drop characteristics of an air-water system in vertical flow which was carried out as part of a programme aimed at assessing the potentialities of such two-phase systems as reactor coolants.

The pressure-drop data reported were largely confined to the climbing-film and liquid-dispersed flow regimes. The experimental equipment employed was also designed for measuring the film thickness and the liquid distribution between the climbing-film and the gaseous phase, i.e. the degree of liquid entrainment. This aspect of their work Bennett and Thornton are to describe subsequently in a separate paper.

Bennett and Thornton conclude that the two-phase friction-factor concept proposed by Govier *et al.* (Canad. *J. Chem.* Eng. 1957 (Aug.) 58) affords a satisfactory basis for interpreting the pressure-drop measurements for an air-water system operating in the climbing-film and liquid-dispersed regions. It has been found that the friction-factors for each test-section could be expressed as functions of the superficial gas and liquid Reynolds numbers which correlated approximately 85% of the data to within ±25%.

Further work, these investigators state, is required on the effects of changes in the physical properties of the system and the size, geometry and relative roughness of the test-section before a generalised correlation can be developed for flow regimes under consideration.

New Antibacterial Skin Cleanser

INTRODUCED by Bayer Products Ltd., Kingston upon Thames, Surrey, is a new antibacterial skin cleanser, pHisoHex. It is a creamy emulsion containing a new detergent (alkylphenoxypolyethersulphonate), as well as 3% hexachlorophene on a weight-for-weight basis in a colloidal dispersion and lanolin cholestrols.

The preparation is stated to have a very efficient cleansing action and because it has the same pH as skin and because of its emollient action, it does not cause the drying, irritating and allergic effects normally associated with soap and detergents. After washing with pHisoHex a semi-permanent antibacterial film is formed on the surface of the skin which continues the antibacterial action for many hours and sometimes days.

Safety in Use of Ionising Radiations

Revisions to the draft code issued in July 1957, for protection of workers engaged in operations involving production, emission or use of sealed sources of ionising radiations, are contained in the second preliminary draft of the Factories (Ionising Radiations) Special Regulations, published by the Ministry of Labour. In the new draft of the regulations, the schedule specifying the maximum permissible radiation doses has been remodelled, taking account of the views of the Medical Research Council and the revised recommendations of the International Commission on Radiological Protection.

O.E.E.C. SURVEY OF CHEMICALS

Trends in Import-Export Trade with Non-member Countries

IMPORTS from other non-members* rose by 6% in 1958 largely due to increased deliveries of basic chemicals. These imports are considered unimportant and in fact account for less than 9% of total chemical imports by O.E.E.C. countries. The "other non-member countries" took 36% of total exports by O.E.E.C. countries. Imports from Eastern Europe (including U.S.S.R., but excluding Finland and Yugoslavia) do not account for more than about 4%, and exports for more than about 3% of the O.E.E.C. countries' total trade in chemicals in 1958. There is, however, a rising trend in these imports since 1956 (+11% in 1957 and +25% in 1958).

Organic chemicals are stated to be responsible to a large extent for the increased imports although inorganic chemicals and fertilisers also contribute substantially. Increase in O.E.E.C. exports to Eastern Europe from 1956 to 1957 is reported to be due principally to larger shipments of plastics materials, although pharmaceuticals and organic chemicals were also important.

Trade in the Different Branches. Imports of *Inorganic Chemicals* at $309 million were 2% lower than in 1957, and from the Dollar Area fell by 8%. Sodium phosphates exports from the U.S. declined from $2.8 million to $400,000 in 1958, and exports of contract carbon black from $8.3 million to $7.5 million. O.E.E.C. countries' exports of inorganic chemicals ($371 million) declined more rapidly than imports (by 7% compared with 1957).

Imports of *organic chemicals* rose by 17% over 1957 to reach $398 million and exports by 12% to $453 million. Purchase of a few products imported in large quantities from the U.S. in the past fell in 1958. U.S. ethylene glycol exports, for instance, amounted to $12.9 million in 1957, but to only $4.8 million in 1958.

Imports of *crude chemicals,* from coal, petroleum and natural gas, at $37 million were 11% lower than in 1957 and exports, at $31 million, 20% lower. Trade with the Dollar Area was most affected: German exports to this area fell from $6.4 million to $2 million in 1958.

Trade in *coal tar dyestuffs* (including Switzerland) declined by 10% in value in 1958 compared with 1957. Exports to the Dollar Area continued, however, to increase.

Imports of *pharmaceuticals* continued to expand in 1958, although after rising by 17% in 1957, these only increased by 6% in 1958 to reach $232 million. The increase of 22% in exports in 1957 over 1956 was followed by a 1% fall in 1958 when exports amounted to $387 million. Intra-European trade was stable in 1958, but expansion in trade with the Dollar Area was fairly marked. Imports from dollar countries rose by 26% and exports by 5%.

O.E.E.C. countries' imports of manufactured fertilisers, at $225 million, remained relatively static in 1958, but exports rose by 8% to reach $471 million. Exports to the "other countries" increased by 17% over 1957 and accounted for 47% of total fertiliser exports in 1958. Principal destinations for O.E.E.C. exports include China ($43 million), Japan ($19 million), Egypt ($17 million) and South Korea ($15 million).

Miscellaneous *chemical materials and products'* imports at $528 million rose 8% in 1958 over 1957 and exports at $720 million by 7%. Rather more than 50% of total imports in this group, and rather less than 50% of total exports are accounted for by trade in plastics materials which increased more rapidly (by 14% for both imports and exports) than trade in this group as a whole. The increase in trade was considerably larger in tonnage terms than in value, e.g., exports to the Dollar Area rose by 20% in tonnage but their value fell by 3%.

* *Continued from 'Chemical Age', 16 January, p. 131.*

Europe's Rapidly Rising Production of Plastics Materials

FOUR countries—France, Germany, Italy and the U.K.—account for 88% of total sales of plastics materials in O.E.E.C. countries. In some of the smaller producing countries output is expanding very rapidly, the O.E.E.C. Chemical Products Committee states in its report 'The Chemical Industry in Europe 1958-1959.' In Austria and Norway, for example, production rose by over 30% in 1958 compared with 1957.

France. In terms of sales by factories production of plastics materials rose from 183,000 tons in 1957 to 232,000 tons in 1958, a 27% increase. Thermoplastics showed the largest increase in tonnage to 122,000 tons (+32%). In this group, an exceptional increase in production of polystyrene took place, amounting to 28,000 tons in 1958, 50% more than in 1957. Cellulose derivatives' sales increased by 34% to reach nearly 37,000 tons. There was a less spectacular expansion, however, in thermosetting products, although even sales here rose by 17%.

Rapid development in production of high and low pressure polythene was expected in the years 1959-60. Output in 1959 was expected to be double that of 1958, and a further 100% increase on 1959 is expected this year. Forecasts of polystyrene production show an increase of 15% in each of the years 1959 and 1960.

Germany. Sales of plastics materials by factories reached a record figure of 629,000 tons in 1958, a 15% increase over 1957 (22% in 1957 over 1956). Thermoplastics output increased most (by 18%) with remarkable progress being made by polythene. Polypropylene production on a commercial scale started in 1958 and polystyrene output was considerably expanded. Sales of thermosetting resins rose by 14% over 1957 and of the newer materials in this group, outstanding expansion is noted in sales of polyester resins, silicones, polyurethanes and epoxy resins. Production of polycarbonates was also started on a commercial scale in 1958. Sales of cellulose derivatives rose by 6%.

The O.E.E.C. committee records that it is unlikely that the expansion in sales of plastics materials in 1959 will reach the 1958 level. Little alteration is expected in sales of phenoplasts and aminoplasts but output of cross-linked polyurethanes and polyesters is seen as likely to develop. Among the polymerisation products sales of polythenes and polypropylene may be expected to expand.

Italy. Plastics materials sales from factories on home and export markets reached 165,000 tons in 1958, (+23% over 1957). Largest increases were in thermosetting resins, phenolic and aminoplastics (+17%) and polythene, p.v.c., polystyrene and thermoplastics (+29%). Sales in this last group reached 96,000 tons due to expanded sales of p.v.c., vinyl resins and polythene. There is a growing output of polypropylene and a new acrylic and methacrylic resin plant came into production in 1958. A notable increase took place in sales of glycerophthalic resins for varinsties and polyesters. Polyester film production also began in 1958.

United Kingdom. Plastics materials production was higher in 1958 than in 1957, but sales only rose by 7%. The situation was less favourable in the first half of the year than in the second when an improvement in home demand was coupled with a particularly high level of exports. Sales of polythenes, p.v.c. polystyrene, acrylic and most other thermoplastics materials, showed the largest increase (+13%) over 1957. Polythene sales were a third higher than in the previous year, and sales of acrylics 10% higher. Sales of phenolic and aminoplastics, alkyds and most other

thermosetting resins remained at practically the same level as in 1957. Polyester sales showed a marked increase; sales of cellulose derivatives were about 5% higher but sales of casein plastics dropped, falling below 1957 by 16%.

General Trend in Plastics Sales in 1958. A total of 1,640,000 tons of plastics materials was produced (+15% as against 19% in 1957 over 1956). German sales accounted for 38% of total sales in both 1957 and 1958. The U.K.'s share of total sales fell from 28% to 26%. France, accounted for 14% (from 13%) and Italy for 10% (from 9%).

The group showing the largest increase in 1958 includes polythene, p.v.c., polystyrene, acrylic and most other thermoplastics materials; sales rose by 20% to reach 778,000 tons and accounted for nearly 49% of total sales of plastics materials compared with nearly 47% in 1957.

Sales of p.v.c. by France, Germany, Italy, Norway and the U.K. rose by 10% to nearly 310,000 tons, while sales of polystyrene by Austria, Denmark, France, Italy and the U.K. increased by 23% to 76,000 tons.

Investments. Investment in the plastics industry is being maintained at a high level and for the three major producers, France, Germany and the U.K., amounted to about $200 million in 1958.

International Trade. From import and export figures included in the O.E.E.C. report, it is noted that O.E.E.C. member countries' exports of plastics rose appreciably in 1958 to reach 488,000 tons. This was an increase of 29% over 1957 and surpass considerably the increases of the two previous years when tonnage exported rose in each case by 19%.

Inter-European trade developed rapidly and accounted for nearly 60% of O.E.E.C.'s total exports in 1958 (33% in 1957 to 291,000 tons with polythene, p.v.c. polystyrene, acrylic and other thermoplastics accounting for 50% to 60% of this total). 'Other non-member countries' were next in importance taking 143,000 tons or 29% of total plastics exports in 1958; 26% more than in 1957.

Exports to the Dollar Area increased by 20% in 1958, although the Netherlands, Portugal and Sweden exported less to the dollar countries in 1958 than in 1957.

O.E.E.C. member countries imports in 1958 were the reverse of the export trend at 380,000 tons, imports rose by 23% over 1957, compared with 27% in 1957 over 1956 and 29% in 1956 over 1955. Imports from the Dollar Area (28% of total imports) rose by 18% in 1958 (+ 37% in 1957 and + 46% in 1956). For the second year in succession there was a marked rise in German imports, which at 26,000 tons were 44% higher than in the previous year and amounted to over a quarter of total O.E.E.C. imports from the Dollar Area. Imports from 'other countries' showed an increase from 3,070 tons in 1957 to 8,860 tons in 1958. Imports of p.v.c. from Japan are stated to be in part responsible for this increase.

(To be continued)

Britain to Show Instruments to Moscow

An exhibition of British scientific instruments to be held in Moscow from the 16 to 26 June 1960, is said to be the first to be put on in Russia by a British organisation of manufacturers in a specialised field. It is possible that some additional exhibitors will participate, and further inquiries are still being received by the Scientific Instrument Manufacturers' Association, 20 Queen Street, London W.1, the organisers.

More Areas for B.A.

At a recent meeting of the British Association for the Advancement of Science, at which Sir George Thomson, F.R.S., a Nobel prize winner, was installed as president for 1960, it was stated that there had been a growth of area organisations from three to 15 during 1959.

U.K. Chemical Sales Topped £2,000 Million Mark in 1958

SALES by the British chemicals and allied industries in 1958 were valued at £2,184 million (£1,665.8 million in 1954) according to the provisional results of the 1958 Census of Production. U.K. sales of general chemicals in 1958 were valued at £518.3 million (£367 million in 1954). The following is an extract of the provisional results, which cover all U.K. establishments:

	Year	Sales of goods produced & work done	Net output	Average number of: operatives	other employees	Change during the year in, Stocks of materials and fuel	Work in progress & stocks of finished products	Capital expenditure on: Plant, machinery & vehicles	New building work
		£ million		Thousands		£ million			
Chemicals and allied industries	1954	1,665.8	538.6	283.8	124.5	+18.8	+18.9	88.6	26.4
	1958	2,184.0	734.9	292.1	147.4	− 8.4	+ 7.6	171.7	42.6
of which:									
Mineral oil refining	1954	301.4	37.0	12.3	4.1	+ 0.1	+ 3.2	13.2	2.8
	1958	383.0	35.1	14.3	5.2	− 0.0	− 0.7	33.8	6.1
Chemicals (general) ...	1954	367.0	155.9	75.1	33.8	+ 3.5	+ 3.5	39.1	12.0
	1958	518.3	245.8	87.4	43.3	− 0.7	− 0.3	81.1	19.2
Pharmaceutical preparations	1954	97.3	51.8	27.2	13.5	+ 1.3	+ 1.9	2.4	1.0
	1958	123.9	69.2	28.5	17.1	− 0.3	− 0.6	5.0	2.6
Paint and printing ink ...	1954	124.1	52.3	23.3	18.9	+ 1.1	+ 1.5	2.6	1.2
	1958	150.9	64.5	24.2	21.5	− 1.3	+ 0.1	4.2	2.2
Soap, detergents, candles and glycerine	1954	94.9	29.0	14.4	7.6	+ 1.2	+ 1.2	2.9	0.5
	1958	121.6	41.9	13.8	8.5	− 2.1	+ 0.2	4.1	1.0
Synthetic resins and plastics materials	1954	83.4	33.3	14.5	8.1	+ 1.1	+ 1.5	5.1	1.5
	1958	134.6	49.5	19.1	10.9	+ 0.1	+ 0.5	10.4	3.5

Shell Interest in Liquid Gas Transportation

KNOW-HOW provided by Royal Dutch/Shell and Constock International Methane Co. Ltd. will be the basis of a jointly-owned new company to develop commercial transportation of methane in liquid form, the company to be known as Conch International Methane Ltd.

The American companies, Continental Oil and Union Stockyards, have pioneered research in the liquefied natural gas field through their joint subsidiary, Constock International Methane Co. Ltd. After much expensive research in transporting natural gas in liquefied form at a temperature of minus 258°F, Constock have acquired valuable knowledge and patents in this new field. Until the development of Constock's new system there had been no means of transporting methane by sea as a liquid.

As a result of this work Constock and the Gas Council in the U.K. participated through a joint company, British Methane Ltd., in a project to ship liquid methane from Lake Charles, Louisiana, to Britain. The first cargo was successfully carried in February 1959 by the *Methane Pioneer*, a tanker jointly owned by Constock and the Gas Council, since when this ship has continued to deliver regular cargoes of 2,000 tons of liquid methane to the North Thames Gas Board's special depot at Canvey Island, Essex.

Shareholders in Conch International Methane, the new company, will be Canadian Shell (of the Royal Dutch/Shell Group), Continental Oil and Union Stockyards.

Capital Spending Below 1958 Levels

FIXED capital expenditure in the chemicals and allied industries in the third quarter of 1959 was valued at £29.3 million, £8 million below the second quarter total and £15.2 million below the third quarter 1958 level. The following is a table of fixed capital spending in this field from 1954 to 1959:

Year	1st qtr.	2nd qtr.	3rd qtr.	4th qtr.	Year
			(£ million)		
1954 ...	—	—	—	—	112.1
1955 ...	22.9	25.8	28.7	38.8	116.2
1956 ...	34.9	36.5	40.6	49.3	161.3
1957 ...	45.4	48.0	47.7	54.5	195.6
1958 ...	47.5	46.7	44.5	51.4	190.1
1959 ...	38.6	37.3	29.3	—	—

O.C.C.A. Dinner-Dance

Biennial dinner-dance of the Oil and Colour Chemists' Association will be held on Friday, 26 February, at the Savoy Hotel, London. Guests this year will include the president of the Research Association of British Paint Colour and Varnish Manufacturers, Mr. C. W. A. Mundy, and Dr. J. Craik, a vice-president of the Society of Chemical Industry, representing the president. Single tickets are priced at £2 17s 6d each and non-members wishing to attend can obtain application forms from Mr R. H. Hamblin, general secretary, Wax Chandlers' Hall, Gresham Street, London E.C.2.

Mobil Oil Guide on Disposal of Used Soluble-oil Emulsions

INTENDED as a guide to the disposal of used petroleum-base soluble-oil emulsions, is a bulletin issued by Mobil Oil Co., Caxton House, Westminster, London S.W.1 — 'Disposal of Used Soluble-Oil Emulsions'. The suggestions and recommendations presented, the company states, should be tailored to suit any particular situation.

The first point made is that the oily emulsions and other oily wastes should be kept separate and treated separately from other waste liquids since mixing greatly complicates the waste-treatment problem. Most rich emulsions of either oil-in-water or water-in-oil types should be broken by use of acids (e.g. sulphuric) or acid salts (e.g. aluminium sulphate, magnesium sulphate or calcium chloride). The oil can then be disposed of, by burning, for example, and the water neutralised with alkali (such as soda ash or sodium carbonate) before running into sewer or stream. Any insoluble substances are filtered off, before discharging the water.

Very dilute emulsions or non-ionic or cationic emulsions can be disposed of by conventional coagulation methods, using ferrous sulphate and lime. Clarified water is floated off in a stream and the sludge remaining is dewatered on open beds and then dumped. In some instances all three principles are used—settling, breaking the emulsion, and coagulation to further clarify the water.

Disposal of Spent Emulsions with High Oil Content

The most practical method for disposing of spent emulsions that are high in oil content involves breaking the emulsions with acid or acid salt. Mobil recommend that the emulsion be pumped into a cracking tank and be agitated for a few minutes before a sample is drawn. The emulsion is then broken with concentrated alum solution and oil-water ratio determined. (The bulletin gives a table providing the volume of 10% alum solution needed for the volume of emulsion to be broken.)

The solution in the alum tank (which should be lead-lined or made of wood with pipes carrying the solution lead or rubber-lined, and the alum-solution value of the rubber diaphragm type) is prepared on the basis that 1 lb. of alum per gall. of water (at 70°F or above) makes an approximately 10% solution. With agitator runing at moderate speed, the alum solution is fed into the cracking tank over a period of minutes, after which agitation is continued for about 30 minutes. The batch is then allowed to stand for an hour or until separation appears to be complete. Water is added slowly so that oil will overflow into the trough at the top of the cracking tank and from here is drained into drums or a suitable sump or tank. The fresh water is then shut off.

A supply of 10% soda ash solution is prepared in a soda ash tank using 1 lb. soda ash per gall. of water and is added to the cracking plant with the agitator running slowly. When the pH is 7, the flow of soda ash solution is stopped immediately and the water in the tank drained to the sewer. Any oil slick on top should be retained by stopping the flow before the tank is empty.

If small amounts of emulsion must be accumulated over a long period in order to treat a full batch, the emulsion may develop an obnoxious odour due to the formation of hydrogen sulphide as a result of bacterial action. This odour can be eliminated by addition of about 1 oz. of bleaching powder for each 50 gall. of emulsion.

Plant has been designed for 725 gall. of emulsion a day; for smaller operation, either smaller tanks can be used or the storage tank can be omitted and the cracking tank used for both storage and cracking. If larger amounts of emulsion are to be disposed of, larger tanks can be used or a third tank added so that emulsion breaking can proceed at the same time that water from the preceding batch is being neutralised. One plant, for example, disposes of 3,000 gall. a day using a large storage tank and two 1,000 gall. treating tanks.

Variations on this method are possible. Air bubbling can be used for agitation instead of the impeller-type agitator; or sulphuric acid can be used for emulsion, breaking either above or in connection with alum. Where plants have to dispose of spent acids or spent alkaline liquids then usually some process can be worked out so that acid and alkaline materials can be used to advantage.

Triplex Develop De-icing Method Using Bismuth Oxide and Pure Gold

A NEW development in the use of chemicals in clear-view screens for aircraft, shipping and railway-engine manufacturing industries is attributable to Triplex Safety Glass Co. Ltd., of Birmingham, who were first to experiment in the sputtering process for gold filming of laminated glass.

Results of this breakthrough are a number of military and civil aircraft orders, including screens for the Comet IV and the Victor bomber, and a sizeable order from British Railways; and there is no doubt that use of gold film as an electrical resistance is an important added safety factor in modern transportation.

The actual panel, cut to size and perfectly cleaned by means of ammonia/chalk, is fed into a sealed oven containing argon gas, where in a continuous sequence of operations it is layered with bismuth oxide (as an adhesive) a film of pure gold only 50 Ångstrom units thick, and a further layer of bismuth oxide.

So thin is the gold film that it is perfectly transparent, giving only a slight yellow tint to the finished panel. It does not glitter (as do heating wires when buried in glass) and is yet capable of carrying power inputs of 600 watts per sq. ft., or possibly higher. In practical terms, such an installation is capable of de-icing a glass panel at jet aircraft speeds, with outside temperatures in the region of −90°C.

Removing a glass panel which has been sputtered with a film of gold, to act as an elecrical resistance, only 50 Ångstrom units in thickness

Jubilee Conference on Fibre Science

'FIBRE SCIENCE' will be the theme of the annual conference of the Textile Institute in its Jubilee Year, to be held in London from 30 May to 3 June 1960. Some of the world's most distinguished scientists will be participating, and the conference will be opened by Sir Harry Melville, K.C.B., D.Sc., F.R.S., secretary of the D.S.I.R. Sir Harry will take the global view of the impact of modern chemistry on industry generally and will be followed by Professor J. B. Speakman, D.Sc., F.R.I.C., who will consider protein fibres.

Two contributions to open the following day's proceedings are those by Professor M. J. Lighthill, M.Sc., F.R.S. who has just been appointed director of the Royal Aircraft Establishment at Farnborough, and Mr. L. H. C. Tippett, M.Sc., an assistant director, British Cotton Industry Research Association, Manchester. Both will discuss mathematics in relation to industry. Later in the day Mr. Douglas P. T. Jay, M.P., and Professor D. T. Jack, C.B.E., M.A., will view fibre science as economists.

A.E.I. POWER PLANT FOR THE CHEMICAL INDUSTRY

A NEW order has been received by A.E.I. Ltd. for two 450-h.p. Type AMS squirrel-cage motors for the Amlych chemical works of Associated Ethyl Co. Ltd. which is engaged in production of bromine from sea water. The bromine is used at a second works situated in Cheshire where 'antiknock' chemicals are produced for adding to refined petrol (AEI supplied a 450-h.p. Type RS squirrel-cage motor for driving cooling water pumps at the Cheshire plant).

Shell International Petroleum sought two 350-h.p. and two 400-h.p. (FSP and HFSP) squirrel-cage motors for driving gas oil and transfer pumps at the Stanlow oil refinery. The pumps these motors will drive will be associated with the new 30-mile pipeline now under construction between the refinery and Shell's chemical works at Carrington. The pipeline will deal with 'intermediate' products now conveyed to Carrington by road.

A.E.I. were also successful in negotiating a valuable contract from Shell Chemical for a new plastics plant at Carrington. The exact amount of the group's equipment to be used is still under discussion but, so far about 70% of requirements for these units have been finalised, including all the motors, switchgear, transformers, cables and telephones, and the majority of the lighting fittings. It is estimated that about £750,000 worth of electrical equipment will be required, including over 700 flameproof and non-flameproof motors, mostly below 50 h.p. This customer was influenced by the weatherproof features of the motors, particularly on the flameproof types. Weatherproofing enables the machines and the pumps they are driving to be located out-of-doors, allowing dangerous gases readily to disperse.

George Wimpey have ordered a 250-h.p. weatherproof, flameproof, squirrel-cage motor—fully certified for operation in Group III gases, i.e. ethylene and ethylene oxide—for Union Carbide Ltd. This machine is required to drive a centrifugal scrubber water pump at a new works at Fawley which will manufacture a range of petrochemicals.

The group have also continued to receive a substantial share of available business in other sections of the chemical industry. Orders received include a contract from I.C.I. Nobel Division for two 3-h.p. and two 12½-h.p. direct-current motors (Type DY), a 30-kW motor-generator set, gear-boxes, and servo-control gear. This equipment is required for a four-section caustic dip drive to be associated with an alkali cellulose plant at the Dumfries works of I.C.I.

Special protective treatment was required for 27 squirrel-cage motors (Type KN-B and RS) from ½ to 550 h.p. which A.E.I. supplied to the National Smelting Co. Ltd., Swansea Vale Works, for driving gas washing machines, disintegrators, fans and compressors. This equipment is operating in severe corrosive atmospheres in the sulphate, sulphuric acid, hydrochloric acid, and ammonia plants at this works

New B.S. for Chemical Industry

THE newly-revised standard, Nitrogen combustion train (micro-Dumas); B.S. 1428: Part A2: 1959, which specifies the various components of a combustion train for the micro-determination of nitrogen, takes account of developments in technique since it was first published (1950), notably the replacement of the Hein-Kipp carbon dioxide generator by the Tucker generator. The present standard is one of a series of parts of B.S. 1428, 'Microchemical apparatus'; its purpose being to reduce multiplicity in the designs of components. Copies may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London W.1. Price 4s 6d (postage extra to non-subscribers).

In the revised standard for 'Bomb calorimeter thermometers' (B.S. 791 : 1959), requirements for the 12°C range thermometers specified in the 1954 edition have been excluded and only the more accurate 6°C range thermometers for use with bomb calorimeters have been retained. Two grades of accuracy are specified, for seven thermometers for use between 9°C and 33°C at either partial or total immersion. Copies are priced at 4s with postage extra to non-subscribers.

'Methods for the sampling and analysis of fuel gases' is the second British Standard in a series on the sampling and analysing of gases, the first of which, B.S.1756:1952, dealt with flue gases.

The new volume, with 140 pages and 39 illustrations, is arranged in three parts: sampling, general analysis, and special determinations; and three types of apparatus for general analysis are described. Copies are obtainable from the B.S.I. Sales Branch, 2 Park Street, London W.1. Price 25s (postage extra to non-subscribers).

The latest and most reliable ways of phosphating iron and steel against corrosion are defined in a new British Standard (B.S. 3189 : 1959). It supersedes an earlier document (PD.539) and is designed for general use in industry rather than for the more specialised requirements. Copies can be obtained from the B.S.I. sales branch at 2 Park Street, London W.1, price 4s 6d, postage extra to non-subscribers.

New Polythene Conversion Factory Opened

PLANT installed at the new Venus Packaging Ltd. factory recently opened at Ilkeston, Derbyshire, is said to have been purchased from the U.S., Germany, Italy, Belgium and Switzerland, in addition to that made in the U.K. The firm states, however, that British made plant has been used wherever possible. Plans have been made to double production in the coming months, and the company's art department and studio facilities have already been expanded.

History of the firm dates from 1937, when Mr. R. Vaulkhard formed a small packaging-materials business, under the style of Robert Peters and Co., which continued to thrive until, in 1953, the board's interest in polythene as a packing material was followed-up by an intensive sales drive, and plant for manufacture of polythene bags was installed. The company now claims to have the finest factory of its type in Europe for conversion of polythene.

Fall in December Price Index for Chemicals

WHOLESALE price index of the Board of Trade, based on a 1954 average of 100, for the chemicals and allied industries stood at 104.8 in December, a fall of 0.2 on the November figure and 0.1 below the December 1958 level. The following is an extract from the index, showing monthly averages (1954 = 100):

	Dec. 1958	Nov. 1959	Dec. 1959
Chemicals and allied industries:			
Total sales	104.9	105.0*	104.8*
Home market sales ...	105.9	106.7*	106.5*
General chemicals	106.9	106.3	106.3*
Pharmaceutical chemicals ...	82.1	81.8	81.8*
Synthetic resins and plastics materials	91.6	90.0	89.9*
Commodities Wholly or Partly Imported			
Pyrites, c.i.f., U.K. ports ...	75.1	64.9	68.3
Sulphur, crude (for acid making), c.i.f.	80.0	77.4	77.4

* Provisional.

Agricultural Laboratories for Nottingham University

Said to be the most advanced agricultural laboratories in the British Commonwealth, the new installations at Nottingham University were opened last week in the School of Agriculture.

With accommodation for some 200 students housed in a three-storey block, the laboratories will have 50 lecturers for extensive research programmes into problems of plant and animal growth.

Wills

Mr. Harry Edwin Laws, formerly of the British Drug Houses, London, who died on 19 July last, left £19,742 net.

Mr. Bertram Alfred Bull, Ph.C., M.P.S., A.R.I.C., former director of Boots Pure Drug Co. Ltd., and member of the council of the Association of British Chemical Manufacturers, who died on 15 November, left £130,938 net. He left £7,500 to the University College of Nottingham to be applied in the foundation of a scholarship or scholarships in pharmacy.

Overseas News

AMERICAN CYANAMID CHEMICAL EXPANSION PROJECTS IN CANADA

FIRST urea plant to be built in Canada, at American Cyanamid's Hamilton, Ontario, works, was substantially completed last summer with an annual capacity of 66,000 tons. Initial start-up problems are now nearing solution and urea from this plant should be available for the coming fertiliser seasons and also for captive use in plastics manufacture.

The company's Formica project is going forward at the factory in St. John, Quebec, acquired by the Canadian subsidiary, Cyanamid of Canada, Ltd., last year. Conversion of some of the facilities and installation of additional equipment will provide for local production in the Canadian market of the full range of sizes and types of Formica laminated plastics.

At the Canadian subsidiary's Welland factory in Ontario, an undertaking has just been finished and two others are under way; that recently completed and now starting up is for fermentation of Aureomycin (chlortetracycline). The installation will be utilised initially to supply Canadian requirements for animal feedstuffs and later for pharmaceutical grade antibiotics. Two projects started this year are (a) conversion of facilities to permit use of natural gas as a raw material replacing imported coal, and (b) construction of a 190-ton/day nitric acid unit which will augment existing capacity, this being predominantly for captive use.

When combined these will provide for lower costs and larger output with added flexibility in production of ammonia and ammonium nitrate, and it is anticipated these units will be available for use before next autumn.

Large-Scale Czech Nitrogen Production

A nitrogen works which by 1963 will be producing more nitrogenous fertilisers than are at present manufactured in the whole of the country is to come into experimental operation in Czechoslovakia in 1962. The new plant, situated in the Waag valley, will be fed with natural gas by a pipeline leading from Western Slovakia. Some 82 million cu. m. of natural gas and 145 tonnes of lump lime will be processed in the plant annually.

West Germany Fertiliser Production and Exports

In the fertiliser year 1958/59 a total of 1,050,000 tonnes of nitrogenous fertilisers was produced in Federal Germany as compared with some 1,047,000 tonnes in the previous 12-month period. During the same period 170,000 (160,000) tonnes of technical nitrogen were manufactured in the country. (West Germany now produces some 11% of the world total of nitrogen.) Although no rapid improvements are expected in the nitrogen industry's sales, West Germany is hoping to gain a large volume of business in India, where with a national demand at the end of the current five-year plan—1965—of about 1 million tonnes of nitrogen, home production will be no more than some 300,000 tonnes. In 1958/59, some 423,000 tonnes of the German nitrogen industry's output were exported; 47% of these exports went to other European countries, 22% to Asia, 22% to America, 8% to Africa and 1% to Australasia.

New Factory for Montecatini

Work is to begin immediately on the construction of a new factory for the Montecatini company at Codogno, near Milan. Initially the plant will make paints and varnishes. Later it will produce items derived from hydrocarbons for such industries as textiles, leather, paper, timber and building for both home and export markets. The paints and varnishes section will begin production this year with an annual output of some 50,000 to 70,000 tons.

A Montecatini spokesman reports that the factory will be one of the largest in Europe.

Eastman Kodak Polypropylene On Stream This Year

Improvements budget of the Eastman Kodak Co. includes provision for a new polypropylene plant to be constructed at the Texas Eastman Division in Longview. The plant is expected to be in production towards the end of 1960, and to reach annual production rate of 20 million lb. by mid-1961.

U.S. Sulphur Production

According to the U.S. Bureau of Mines, U.S. sulphur output in October was in long tons: native 483,086, compared with 399,157 in September 1959 and 347,838 in October 1958; recovered sulphur totalled 49,950, compared with 52,050 in September 1959 and 53,260 in October 1958.

German Petrochemical Plan

According to a recent news broadcast from Germany, a petrochemical production complex is being planned for the German North Sea port of Brünsbuttelkoog, one of the country's main bunkering and oil loading havens at the mouth of the Kiel Canal.

New Synthetic Rubber Units for Hungary

Plans for a synthetic materials processing plant at the Hungaria Works are nearly ready and design work is in hand for the reconstruction of the synthetic rubber factory there. A new rubber plant is also to be built in the provinces as an extension of this works. A polythene plant to be built at the Tisza Chemical Combine in north-east Hungary is in the design stage and a new plant for the production of caprolactam should be on stream before 1965.

The new fertiliser works of the Tisza Combine which will use methane piped from Rumania, is under construction and is scheduled to produce 210,000 tons of nitrogenous fertiliser a year by 1964.

Dow Chemical to Market New Car Antifreeze Product

Adding a newcomer to their line of consumer products are Dow Chemical. The new product is a cooling system fluid for cars and will be launched in April. It is described as the first car coolant ever sold for year-round use. To be known as Dowgard, it will replace conventional antifreeze, water and rust inhibitors used in car radiators. Protection will be provided from −40°F to +240°F. But not only is Dowgard a good transfer agent, it also reduces, it is claimed, corrosion in cooling systems almost to zero. It is stated to prevent corrosion of the standard metals as well as of the new materials, such as aluminium; and it is compatible with rubber hose, gaskets and other parts of the cooling system.

About 50% of Dowgard consists of deionised water with purity equivalent to that of triple-distilled water. This water is prepared by ion exchange treatment, which removes chloride, sulphate, bicarbonate and other ions that promote corrosion. The other half of the formulation consists mainly of ethylene glycol, together with some diethylene glycol and "a balanced inhibitor system".

Israel Potash Production Fails Expectations

Production of potash at the Dead Sea works, Sodom, fell during 1959 approximately 30,000 tons below the figure of 135,000 tons which had been anticipated. However, improved processes are expected to raise production by 15% during the first months of the new year, and a total of 180,000 tons annually is projected.

Finnish Chemical Output

Recent figures issued from Helsinki show that in the first half of last year chemical production in Finland was higher by 3% than that for the same period of 1958. Output for the first six months of 1959 was indexed 132 (1954 = 100).

Esso's Butyl Rubber Expansion Plans

Plans to increase butyl rubber capacity at their Baton Rouge, La., plant by another 38,000 long tons are announced by Esso. The addition will take place in two stages—20,000 tons due on stream July 1960, and a further 18,000 tons to come in about May 1961. These new additions will raise U.S. butyl rubber capacity to 135,500 long tons.

At Baton Rouge at present, Esso

Standard have 40,000 long tons and Humble Oil's Baytown, Texas, plant has a capacity of 57,500 long tons.

Total production for 1959 for butyl rubber in the U.S. is expected to be about 75,000 long tons or more—the highest ever for butyl.

A large factor in butyl rubber sales are inner tubes and other pneumatic bags, followed by other parts for cars, wire and cable products and butyl car tyres.

Key to future butyl growth is considered to be in latexes and chlorinated butyls. Esso Standard are at present building a plant to make 20,000 long tons of modified products at Baton Rouge. This plant is due to start production this year.

India Synthetic Rubber Plant Projected

The Indian Government has now given its approval for erection of a synthetic rubber plant by the Indian industrialist Tulsidas Kilachand, together with the Firestone Tire and Rubber Co., of Akron, Ohio. Foreign currency equivalent to 75 million rupees is being provided for the project by U.S. and British banks and by Firestone. Initial capacity of the plant is planned to be 20,000 tonnes per year, to be raised to 30,000 tonnes. It is also intended to erect installations for production of butadiene and styrene monomer.

Soda Plant for Argentina

The Swiss firm, Sola, S.A., has obtained official permission from the Argentine Government to invest $13 million through Cia Industrial de Alcalis for the installation of a plant in Patagonia for the manufacture of Solvay soda and soda products.

Urea Plants in Spain

Plans to put up a plant to produce 200 to 220 tons a day of urea have been announced by Repesa SA of Spain. Site of the new plant will be Cartagena. Another urea plant in Spain is that of Cia. Aragonesa de Industrias Quimicas SA. It is located at Salimanigo in the Huesca province of Spain and operates under licence of Pechiney with a production of 1,500 tons a year.

U.S. Plastics Output Increased 25%

Plastics products fabricated in the U.S. during 1959 rose to $3,000 million, from £2,500 million in 1958, state the Society of Plastics Industry Inc., of New York. Such products climbed 25% in quantity and 20% in value, and the industry envisages a further 15% increase in output for 1960.

Canadian Reichhold Acquire Vacuum Chemical at Ontario

Varcum Chemical Corporation (Canada) Ltd., manufacturers of phenolic moulding compounds, with plant and offices at Lindsay, Ontario, and plans for the erection of another plant at Ste. Therese, Quebec, have been acquired by Reichhold Chemicals (Canada) Ltd. from Reichhold Chemicals Inc., White Plains, N.Y., who hold a major stock interest in the Canadian Reichhold company. Reichhold Chemicals (Canada) are to invest considerable capital in new facilities for the production of basic resins for moulding compounds and for the full production of Varcum Chemicals in Canada.

New demands for basic chemicals have caused Reichhold (Canada) to plan an early start on construction of another phthalic anhydride plant adjacent to their existing plant at Ste Therese. The unit will be designed to produce an additional 7 million lb. a year, and it should be on stream late this year.

German Merck Expansion in the Argentine

Leading pharmaceutical producers, E. Merck AG, of Darmstadt, West Germany, are to invest a sum of $3 million in the expansion of their chemical and pharmaceutical factory in the Argentine province of Buenos Aires.

Plans For Europe's Sulphur Industry

The Sulphur Experts Committee of the European Economic Committee are working out the details of the general programme for sulphur industry formulated by the Council of the Ministers of the European Community on the occasion of their latest session in Brussels.

The Italian proposal has been accepted in its essential lines and, thus, by virtue of Art. 226 of the Treaty of Rome, the Italian sulphur market will enjoy protection for a period ranging from six to eight years as imports of sulphur into Italy will be forbidden.

The European Community will help to finance a plan of modernisation of Italian sulphur industry through the Investments Bank to the extent of 40 milliard lire.

Ten milliard lire will be earmarked for reorganisation of the mines and 30 milliard for other schemes which include indemnities for dismissed redundant workmen, expenditure upon vocational training for workmen's children, etc.

1960 Chemical Trading Between France and Spain

New agreement for trade between France and Spain during 1960, signed in Madrid at the end of last year, describes chemical goods and allied products and plant as tabled below.

Exports to Spain	Value in millions Francs
Hyperphosphates	25
Lubricants	*
Misc. chem. products, including oleic and stearic acid, chlorinated dielectrics	15
Plastics and celluloid materials	5
Pharmaceutical specialities	40
Miscellaneous plant, not liberalised, inc. equip. for chem. and rubber industries	1,900
Exports to France	
Salt (for Fr. O'seas territories)	45
Anthracite	*
Furfurol	*
Methacrylic derivatives	30
for Algeria)	50

* *As Required.* (*Based on Exchange* 1382 Fr./£.)

Canadian Chemicals Advance at Reduced Pace

CANADA'S chemical output increased in 1959 and further gains are envisaged for 1960, according to a New Year's review by the president of Canadian Industries Ltd., Mr. P. C. Allen, though the advance was significantly below the postwar average. During the first six months there was little gain over levels prevailing at the close of 1958, but later evidence suggested that production rates were improving in several parts of the industry.

A long strike in Canada's government-owned synthetic rubber plant reduced chemical output values during the first half year. Drugs and plastics continued to meet growing foreign competition, which was intensified in 1959; and imports supplied a larger portion of the domestic market during 1959.

A decline was apparent during the first eight months of 1959 in exports of chemicals and allied products, which normally account for about 16% of the industry's annual output. The drop occurred mainly in trade with the U.K., which has been one of the few expanding markets for Canada's exports of chemicals in the past few years.

Turning to more favourable aspects of the industry's performance last year, certain parts benefited directly from the strength in consumer expenditures throughout 1959. Sales of cosmetics and synthetic detergents showed a continuation of the growth evident in 1958, and shipments of paints were also maintained at high levels.

Later in the year activity improved in Canada's forest, mineral and metals industries, and shipments of sulphuric acid, ammonia, caustic soda and chlorine rose accordingly. Production of adhesives and their chemical ingredients went up to meet high output in the plywood and packaging industries. The domestic market for fertilisers appears to have exceeded the 1958 level by a slight margin but export markets showed some weakness during the early months of the year.

Apart from caustic potash and tall oil plants, and a recently announced maleic anhydride project, the industry's investment programme for 1960 reveals a conspicuous absence of 'diversification' projects, and expansions in 1960, as in 1959, will be on the old lines. Examples are petrochemical sulphur, urea, oxidised hydrocarbon products, sulphuric acid, caustic soda and chlorine in the Prairie Provinces; nitric and sulphuric acids, nylons and tetraethyl lead intermediates, polythene, phthalic anhydride, titanium dioxide and phosphate chemicals in Ontario and Quebec; and possibly phenol in British Columbia and caustic soda and chlorine in both B.C. and the Maritimes.

The coming year will also see the start of the Tariff Board's review of the tariff schedules for chemicals and allied products.

B.o.T. LIST FURTHER CHEMICAL INDUSTRY DEVELOPMENTS IN INDIA

THE B.o.T. Special Register Circular (GEN 3782/G) (see CHEMICAL AGE, 3 October 1959, p. 454) gave particulars of companies which, according to information tabled in the Indian Parliament, had been granted licences under the Indian Industries (Development and Regulation) Act, 1951, for the establishment of new industrial undertakings, the expansion of an existing industrial undertaking, or the manufacture of a new product. Now supplementary statements have been issued dealing with chemicals other than fertilisers, dyestuffs, drugs and pharmaceuticals (Board of Trade, Export Services Branch Circulars GEN/3782/H and GEN/3936/C).

Chemical Industry Proper. National Peroxide Ltd., Bombay, are increasing their production facilities for hydrogen peroxide by 150 tons a month to a total of 250 tons a month.

Tata to Expand Bromine Capacity

Bromine production is being expanded by Tata Chemicals Ltd., of Bombay, by 20,000 to 25,000 lb. a month, by continuous working; and sulphate of alumina iron-free is being increased by 600 tons a year and sulphate of alumina (17/18% Al_2O_3 and ½% Fe) by 900 tons a year and ammonia and potash alum 300 tons a year.

Substantial expansions have been authorised for Alkali Chemical Corp. of India Ltd., Calcutta, for a variety of products. Among these are: finished products; accelerators 800 to 1,000 tons a year, antioxidants 1,000 to 1,200 tons a year, and retarders 100 to 125 tons a year. Within a total of 2,250 tons are semi-products required as intermediates for the above-mentioned finished products in quantities corresponding to the finished products. The capacities mentioned above must include the following chemicals which are in current use: dibenzothiazyldisulphide; mercaptobenzthiazole; diphenylguanidine; tetramethylthiuram-disulphide; tetraethyl-thiuram-disulphide; phenyl-β-naphthylamine and phenyl-β-naphthylamine plus diphenyl-*p*-phenylenediamine.

In the fine chemicals section, Bombay Chemicals Private Ltd., Bombay, are substantially expanding production facilities for methyl, ethyl, and butyl esters of *p*-hydroxy-benzoic acid (12 tons of mixed esters per annum).

Plastics and Resins. A new undertaking by Mercury Paints and Varnishes (P) Ltd. of Bombay will be the production of 250 tons a year of alkyd resins at Bombay. At Modinagar Uttah Pradesh, Modl Paints Varnish Works, Modinagar will produce 12 tons a year of alkyd resin and the same quantity of phenolic resin and of urea formaldehyde resin in a substantially expanded plant. Some 420 tons of urea formaldehyde moulding powder will be produced by Ratlan Chand Harjasram (Plastics), Amritsar, at Faridabad, Punjab, while at Bombay, Noble Paints and Varnish Co. will produce 6 tons a month of alkyd resins, 3 tons of modified phenolic resins and 1 ton a month of maleic resins.

Insecticides, Fungicides, etc. It is noted that under Scheduled Industry No. 19 (11) which includes insecticides, fungicides, weedkillers, etc., Tata Fison (P) Ltd., Bombay, are to produce as new items: weedkillers 25,000 gall. a year; and fumigants 1,500 tons a year. Substantial expansion will take place for production of fungicides, 750 tons a year; and organo-phosphoric formulations 20 tons a year.

Lindane (99%) (102 tons a year) will be produced in expanded facilities of Tata Chemicals Ltd., Bombay, while Bharat Pulverising Mills (P) Ltd. of Bombay will produce at Madras yearly 180 tons each of aldrin, chlordane and dieldrin and 360 tons a year each of Lindane, malathion, parathion and pentachlorophenol.

Textile Auxiliaries. A new undertaking is that of Shri Anandlal Hiralalsheth, Bombay, which is to produce yearly 780 tons a year of non-ionic products, 600 tons of anionic products, 100 tons of cationic products and 500 tons of modified resins of urea.

Miscellaneous Chemicals. Among a variety of chemicals sanctioned by the Indian Government for further expansion are carbon dioxide, 2,400,000 lb. a year by the Alembic Chemical Works, Baroda, and 660 tons by the South India Carbonic Gas Industries Ltd., Madras, and activated bleaching powder 1,200 tons a year by Selective Chemicals Pty. Ltd., Bombay, while the following monthly capacities have been announced for Industrial Gases Ltd. of Calcutta for their Fazalguny Factory, Kaupur: Oxygen, 1.26 m. cu. ft.; dissolved acetylene, 0.05 m. cu. ft.; nitrogen, 3.00 m. cu. ft.; high purity oxygen, 0.18 m. cu. ft.; liquid oxygen, 15,000 lb.; liquid nitrogen, 10,000 lb.

Dyestuffs. Some 109.20 tons of harmless food colours and 273.0 tons of dye intermediaries a year are scheduled to be produced by Hickson and Dadajee (P) Ltd. of Bombay and 41.67 tons of vat dyes and 62.50 tons of intermediates a month by Indian Dyestuff Industries Ltd. at Kalayan, Bombay.

Sasol Sales are Expected to Top £7 Million Mark in Current Year

ORDINARY share capital of the South African, Coal, Oil and Gas Corporation Ltd., Sasol, has been increased from £30 million to £42 million, and the non-cumulative 6% preference share capital from £5 million to £6 million. The £10 million debentures have been repaid and the £3 million in short-term loan facilities. This has relieved the corporation of a heavy interest burden. In the year ended 27 June 1959, the corporation showed a cash surplus of £917,847. It is still the corporation's policy to regard operations as developmental until substantially full production has been achieved. In the previous financial year the total sales of Sasol products were £4,834,000, and the total has now increased in the 1958-59 year to £6,722,000 and are expected to rise to £7,500,000 in the current financial year.

Because of preoccupation with the numerous technical and economic problems associated with the oil-from-coal processes, Sasol have not in the past been able to give adequate attention to their chemical possibilities. Neither have they been in a position to enter into long-term contracts for the supply of chemical intermediates and raw materials to other processors. While it may still take many years to find a completely satisfactory solution to some of the oil-from-coal problems, production is nearly on an even keel and Sasol have entered into negotiations with several outside concerns in regard to developments in the Sasolburg area and elsewhere. Sasol's greatest asset is their large capacity for the production of low cost gases from cheap coal. One of these gas streams can, by well-known methods, be split into basic raw materials for chemical manufacture. Quotations for plant have already been received and if negotiations now in progress succeed, there will be available for further processing in this area, propylene, ethylene, methane and hydogen.

Crude tar acids produced from the gas liquor and tar have been shipped to a Netherlands firm for refining on a profit-sharing basis, but after paying transport costs the profits are small. It is now hoped that refining will be done in Sasolburg, and that by 1961 pure carbolic acid and higher tar acids will be available in South Africa. In September, Sasol and National Chemical Products Ltd., registered a new company, Kolchem (Pty.) Ltd. National Chemical Products have been producing a range of oxygenated organic chemicals for many years. Sasol is producing an expanding range of similar chemicals which to some extent duplicate and to a further extent are complementary to N.C.P. products. The new company will further process these materials. A project is under study for a recovery of a further series of higher alcohols at Sasolburg. It is expected that carbon numbers from 5 to 14 will be involved. These alcohols are valuable raw materials in the chemical industry. Not all these developments will be realised in the immediate future.

PEOPLE in the news

● Council of The Research Association of British Paint, Colour and Varnish Manufacturers has appointed **Dr. L. Valentine** as director of research in succession to the founder-director, Dr. L. A. Jordan, who retired in October 1959. Dr. Valentine will take up his appointment at the Paint Research Station, Teddington, as from 1 April 1960, until which time **Dr. S. H. Bell,** who has been confirmed in his appointment as deputy-director, will administer the station.

Dr. Valentine, aged 34, was educated at Inverurie Academy and at the University of Aberdeen, where he graduated with first class honours in chemistry and received the Centre Gold Medal. He carried out postgraduate research on polymerisation at Aberdeen and at Birmingham, being awarded the Ph.D. degree. Later, at Birmingham, under a senior D.S.I.R. award, he carried out further research mainly on copolymerisation. He was from 1952 to 1957 lecturer in the chemistry of high polymers in the Department of Textile Industries at the University, Leeds. His subsequent industrial experience has been that of assistant research manager at Tootal Broadhurst Lee Co. Ltd., Manchester.

● **Mr. H. Cartwright, M.B.E., M.A.,** at present serving as deputy director of industrial power in the U.K. Atomic Energy Authority's development and engineering group at Risley, becomes director of industrial power. In 1954, on the formation of the Authority, he became an assistant chief engineer in the industrial group at Risley. He was promoted to chief engineer in 1955, and assistant director in 1956.

● **Mr. H. D. Walker,** sales director of Constructors John Brown Ltd., returned to London on 15 January from a business visit to Milan.

● **Dr. F. H. Banfield, M.Sc., F.R.I.C., F.R.S.H., M.I.Biol.,** director of research of the British Food Manufacturing Industries Research Association, has been nominated a member of the reconstituted management committee of the Low Temperature Research Station of Cambridge University and the Agricultural Research Council.

● **Mr. Henry G. Norman** has been elected a director of Rexspar Minerals and Chemicals and becomes chairman of the board. Mr. Norman has been president of the Montreal Stock Exchange and the Canadian Stock Exchange, Canadian Consul General in New York and Canadian Ambassador to Venezuela.

● **Dr. F. Fairbrother, D.Sc., F.R.I.C.,** reader in organic chemistry and assistant director of the chemical laboratories, Manchester University, who has been granted status of professor and appointed to the chair of inorganic chemistry, was awarded first-class honours in chemistry in 1915 and obtained his M.Sc. the following year (see CHEMICAL AGE, 26 December 1959, p. 932). He has for many years been recognised as a leading inorganic chemist and has represented the U.K. abroad at various scientific conferences. His fundamental work on some of the rarer elements, including niobium and tantalum and their compounds, has attracted attention at home and abroad, and he has contributed articles to numerous scientific journals.

● **Mr. A. F. Dugan** has been appointed director of planning, W. R. Grace and Co., Chemicals Division, New York. He will be under the direction of Mr. W. J. Haude, president of the division, and will work on co-ordination of divisional projects, management and administrative functions.

● **Mr. Philip Caird Daley** has been appointed solvents sales representative for the Shell Chemical Co., in the area covering districts of Staffordshire, Hereford, Worcester and Warwickshire, which includes Birmingham. He joined the company in 1948.

● **Mr. John Carter** has been appointed technical representative of Sintered Products Ltd., Sutton-in-Ashfield, Notts, for the area covering Leicestershire, Derbyshire, Notts, Yorks, Durham and Northumberland. He has been with the company some two years.

● **Dr. W. M. Hampton, O.B.E., F.R.I.C.,** managing director of Chance Brothers Ltd., will deliver the fifth Chance memorial lecture 'The Development of Siemens Furnaces for Glass Melting'. The lecture will take place at 7 p.m. on 9 February in the Chemistry Department, Birmingham University.

● **Mr. E. P. Danger,** who has resigned as a director of Kemp's Bureau of Trade Research Ltd., with whom he was connected for a number of years, plans to operate as a specialist in industrial market research and to advise on marketing and organisation problems, particularly those dealing with the sales of capital and technical products. He believes that manufacturers are now turning increasingly to industrial market research and to other marketing assistance to help them develop their sales and products. Mr. Danger has arranged an affiliation with Faber Birren of New York, whose research organisation—American Color Trends—serves a wide number of business organisation. Colour research is a comparatively new development so far as this country is concerned. Mr. Danger's address is 43 Duke Street, St. James's, London S.W.1.

● The appointment of **Captain R. A. Villiers, C.B.E., A.M.I.E.E., R.N.(ret.),** as the first director of the Scientific Instrument Manufacturers' Association from 1 October 1959, was a major step in the administration and reorganisation of SIMA and the beginning of a new era of expanding activities. To facilitate this, **Mr. G. A. Knight** has been appointed assistant director and will operate under Captain Villiers in the field of information and external activities in particular. He will be responsible for the collection and distribution of information for SIMA.

● **Mr. A. W. Graham** is succeeding **Mr. H. Maxwell** as manager, northern area, for Electro-Chemical Engineering Co. Ltd., Chaddock Industrial Estate, Astley, near Manchester (Atherton 1364). Mr. Maxwell has been appointed sales manager and will operate from the head office at Sheerwater, Woking, Surrey.

● **Dr. J. G. Pearce, C.B.E.,** has been appointed as a consultant to the Alloys Division of Union Carbide Ltd., London, and will work in collaboration with Dr. A. M. Sage and his team in their development programmes. **Mr. G. V. Jones, A.I.M.,** formerly of A.P.V.-Paramount Co. Ltd., has joined the development department of the division. He will be mainly concerned with developments associated with the cast-iron industry.

● **Mr. B. R. Fraser** has been appointed manager of a new manufacturing department of the Mobil Oil Co., to be located in the head office at Caxton House, Tothill Street, London S.W.1. Mr. Fraser is at present the manager of the company's refinery at Coryton, Essex.

● **Mr. J. E. C. Bailey, C.B.E., M.I.Ex.,** chairman and managing director of Baird and Tatlock (London) Ltd. and Hopkin and Williams Ltd., will leave the U.K. by air on 30 January to visit the companies' branches, agents, representatives and customers throughout East, Central and South Africa.

● **Mr. J. G. Window,** sales director of QVF Ltd., chemical engineers in glass, of Fenton, Stoke-on-Trent, just back from an extensive trip to Canada and the U.S., has travelled 96,000 miles during 1959 on various visits abroad.

Obituary

Dr. Alexander Rule, M.B.E., who retired from his post of laboratories controller of the I.C.I. Billingham Division in 1944, died on 12 January at Newcastle. A graduate of Liverpool University, where he gained his B.Sc., M.Sc. and D.Sc., Dr. Rule was placed on the honours list for his work on munitions during the first world war.

The death was announced recently of **Sir William Neill, F.A.I., F.R.I.C.S., J.P.,** chairman of the British Water Research Association. He was M.P. for Belfast North from 1945 to 1950, and had been Lord Mayor of Belfast.

Commercial News

• Aspro Bid for Owners of British Schering
• Borax Group Profit Higher by £1.3 Million
• Howards 10 Months Profits Up by 100%
• £3 Million Capital Rise for A. and W.

Aspro-Nicholas

A share exchange and cash offer worth about £4.2 million has been made by Aspro-Nicholas for the £1.5 million ordinary stock of Griffiths Hughes Proprietaries. A joint announcement gives the terms as three Aspro 5s ordinary plus £6 cash for every £4 Griffiths ordinary, or equal to three-quarters of an Aspro ordinary and 30s cash for each £1 unit.

In making the offer, Aspro state that for the first nine months consolidated net profit for 1959-60 (excluding the profits of Griffiths) should be materially in excess of that for the previous year. It is intended to recommend dividends totalling not less than 34% (24%).

Griffiths proprietary lines include Rennies, Kruschen Salts, Kwells, Radox and Shavex. All the capital of J. C. and J. Field was acquired in 1958. It is understood that Griffiths Hughes also own British Schering. (See also p. 162).

Borax (Holdings)

Group net profit of Borax (Holdings) for 1959 was £2,344,000 (£966,075). Gross profit was £3,514,118 (£1,624,997). Dividends accruing to Borax (Holdings) Ltd. per 5s. unit of Stock were 1.75d. interim (same) and a final of 4.25d (3.50).

British Industrial Plastics

A 2½% increase in dividend for year ended 30 September 1959 is announced by British Industrial Plastics Ltd., together with a proposal for a capitalisation £1,476,812, of reserves in a one-for-one scrip issue.

Group profit was £1,113,026 (£979,129) and net profit was £445,616 (£312,508).

William Briggs

Net trading profit for 1959 for William Briggs and Sons Ltd., East Camperdown Street, Dundee, is £251,520 (£351,640), with final dividend for the year to 30 September on ordinary shares of 9%, plus interim of 5%, making a total of 14% (same).

Howards and Sons

Unaudited interim accounts of Howards and Sons show an estimated group net profit, before tax, for the 10 months ended 31 October of £117,900 (£54,500 same period of 1958). Proceeds of sale of certain trade investments (not included in the estimated profit) will enable the group to meet out of its own resources cost of the present development and improvement projects at Ilford.

The company generally shared in the "unusual activity" of the chemical industry since the early summer of 1959 and conditions for the next few months also look promising, states Mr. T. W. Howard, chairman. New plant for phthalic anhydride is expected to start full production this year. The Canadian subsidiary has shown steady, if modest, profits for the year to date; its productive capacity and profitability will substantially increase when a plant extension, now under construction, is in full operation this summer.

The company's year-end has been changed to 30 April and the current year will cover a period of 16 months. An interim dividend of 4% is to be paid on ordinary, to avoid any inconvenience in the delay in paying the ordinary dividend due to the change in the company year. If present trading conditions continue, the final should be not less than 6%.

Elliott-Automation

Subject to certain consents required by the vendor, Elliott-Automation Ltd. have bought for cash the nucleonic instrumentation business of Isotope Development Ltd., including their laboratories and works at Beenham, near Aldermaston, in Berkshire. Elliott's are acquiring the name and goodwill of Isotope Development, but not the business of their subsidiary, R. A. Stephen and Co.

Purpose of the merger is the wish of both companies to avoid the duplication of scientific effort in the nucleonic instrument industry. This merger, subject to approval of shareholders and members of Isotope Developments, will become effective on 5 February. The company will change its name to Nucleonic Investments and will continue to be the owners of R. A. Stephen, which produce radiation measuring instruments.

The Elliott-Automation Group have widened the scope of their interests in control valves by the purchase of Black Automatic Controls Ltd., of Corsham, Wilts, manufacturers of control valve and pressure regulating equipment.

INCREASE OF CAPITAL

ALBRIGHT AND WILSON LTD., Oldbury, near Birmingham. Increased by £3 million, beyond the registered capital of £9 million.

MCKEE HEAD WRIGHTSON LTD., 16-26 Baltic Street, London E.C.1. Increased by £249,900, beyond the registered capital of £100.

NEW COMPANY

METAFIL MANUFACTURING CO. LTD. Cap. £1,000. Manufacturers and suppliers of plastic metal, chemical manufacturers, manufacturing chemists; to acquire the trade mark Metafil and goodwill in connection therewith, etc. Directors: J. Compton and N. P. Austen. Reg. office: 122a Anerley Road, London S.E.20.

I.C.I. Place Polypropylene Motor Contract with A.E.I.

The A.E.I. Motor and Control Gear Division has secured from I.C.I., through the Constructors John Brown, a complete motor contract for the new Propathene polypropylene plant at Wilton. This involves about 150 flameproof and flame and weatherproof motors.

Memorial Service

A memorial service was held last week for **Mr. George Herbert Spilman**, chairman of British Celanese Ltd., whose death was recorded in this journal on 2 January. The service took place at St. George's, Hanover Square, London.

Market Reports

GOOD TRADE IN SODA AND POTASH PRODUCTS

LONDON Active trading conditions prevail in most sections of the market with new home business covering a wide range of industrial chemicals. The flow of export inquiry has also been satisfactory.

Routine soda products and potash chemicals are moving steadily against contracts and a firm price basis continues generally. The demand for fertilisers remains moderate. Among the coal tar products there has been a good call for creosote oil and tar acids whilst available supplies of naphthalene are finding a ready outlet.

MANCHESTER Home and export movement of chemicals has been reasonably steady. Industrial users, including textile and allied trades, are taking satisfactory deliveries under contract and a fair number of new enquiries are in hand. Prices are generally steady.

SCOTLAND Trading has been quite brisk during the past week in the Scottish heavy chemical market which has settled again to normal conditions. From most sections of industry demands have been well maintained, and in particular those pertaining to the textile and paper trades. Contract deliveries against contract requirements have also been fairly well demanded. Prices on the whole have remained firm although some variation was noted in those relating to metal derivatives. There is still considerable interest being shown in the overseas market both in regard to inquiries received and resultant business.

I.C.I. Chairman Opens New H.Q. for Alkali Division

General view of Brunner House

BRUNNER HOUSE, new offices of Imperial Chemical Industries' Alkali Division, at Winnington, Northwich, were officially opened last week (15 January) by Sir Alexander Fleck, chairman of I.C.I., who cut a tape with a pair of eighteenth-century scissors.

Also present at the ceremony were Mr. J. K. Batty (chairman of Alkali Division), Sir Felix Brunner, grandson of one of the founders of Brunner Mond and Co., forerunner of I.C.I., Lord Leverhulme (Lord Lieutenant of the City and County of Chester), Sir Wesley Emberton (Deputy Lieutenant, and chairman of Cheshire County Council) and Dr. J. Ferguson (research director of I.C.I.).

Mr. Batty, after referring to Sir Alexander's impending retirement in February, presented him with a cut-glass rose bowl on behalf of the staff of the division. (See also 'Distillates,' p. 162).

"Largest-ever" Symmetrical Nylon Shapes to be Produced in U.K. by Polypenco

CLAIMED to be the largest ever produced, nylon symmetrical shapes weighing up to 400 lb. have been made by the Polymer Corporation, Reading, Pennsylvania, U.S., parent company of Polypenco Ltd. These massive sections are the result of 'a revolutionary new technique' and are being made available in limited quantities for evaluation purposes. They will shortly be supplied on a production basis and will be fabricated by Polypenco.

The company states that availability of these large shapes, together with the economy introduced by new production techniques, should expand the use of nylon in the metalworking and manufacturing fields. It is further indicated that even larger sizes are possible with additional investment. Such sizes are said to open up tremendous possibilities for applications such as tooling fixtures, wear plates, large rollers, etc., where nylon's properties are desired and non-ferrous metals or stainless steel materials were previously used. In many instances, these parts may now be made less expensively from large nylon shapes.

Paper processing and textile manufacturing are among the industries where large cylindrical nylon rolls have a potentially wide application because of nylon's inherent corrosion resistance, resilience and mechanical surface characteristics. To date, Polypenco have been producing the following nylon shapes and sizes: Round rods from 1/16 in. to 8 in. diameter, flat stock from .001 in. to 5 in. thickness in widths to 24 in., tubing from 1/16 in. to 16 in. outside diameter, etc.

Russian Atomic Scientists Visit Dounreay

Four members of the Russian fast reactor team started a week's visit to the U.K. on 10 January. On Monday and Tuesday they visited the fast breeder reactor at Dounreay. On Thursday they were due to visit Calder Hall and to spend Friday at Harwell.

Danish Research Reactor Becomes Critical

THE Danish Atomic Energy Commission have confirmed that their nuclear research reactor, supplied by Head Wrightson Processes Ltd., a subsidiary of Head Wrightson and Co. Ltd., became critical on 17 January. The tests carried out on this reactor, which is situated at the Atomic Research Centre near Copenhagen have proved entirely satisfactory and the project was completed on schedule.

Import Duty on Monoammonium Phosphate

THE Board of Trade are considering an application for reduction from 33⅓% *ad valorem* to £4 a ton of the import duty on: 'Ammonium dihydrogen orthophosphate containing more than 0.5% by weight of material insoluble in water and containing less than 59% by weight of phosphorus calculated as P_2O_5'.

A statement of applicant's case will be made available to firms and organisations with a *bona fide* interest, if they are prepared to undertake to treat the information contained as confidential and to allow their comments to be passed to the applicants for reply. Requests for a statement of the case, with the undertaking required should be addressed in writing to the B.o.T., Tariffs Division, Horseguards Avenue, London S.W.1, before 9 February.

NEW PATENTS

By permission of the Controller, HM Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 2 March

Synthesis of steroids. Olin Mathieson Chemical Corp. [Divided out of 829 632.] **829 633**

Machines for use as distributers for fertiliser or other granular material. Stokland, S. **829 610**

Device for continuous analysis of hot, dust-bearing gases. Hüttenwerk Oberhausen A.G. **829 267**

Preparation of isoprene. Houdry Process Corp. **829 611**

Amides and the preparation thereof. Upjohn Co. **829 270**

Production of ethylene oxide. Bataafsche Petroleum Maatschappij N.V., De. **829 613**

Hydrogenation catalysts. Chemetron Corp. **829 475**

Antiknock compositions. Ethyl Corp. **829 523**

Steroids and the manufacture thereof. Upjohn Co. **829 476**

Desulphuristion of ferrous melt. Union Carbide Corp. **829 274**

Fungicidal copper sprays. Farbenfabriken Bayer AG. **829 479**

Manufacture of anthraquinone vat dyestuffs. Ciba Ltd. Ciba Ltd. [Addition to 794 849.] **829 527**

Nicotinyl hydrazide. Erba S.p.A., C. **829 533**

Dithiocyclopentene derivatives. Farbenfabriken Bayer AG. **829 529**

Production of pyrido (3, 2-d) pyrimidine compounds. Parke, Davis & Co. **829 276**

Evaporation of foaming liquids. Bataafsche Petroleum Maatschappij N.V., De. **829 532**

Choline gentisate. Soc. des Usines Chimiques Rhone-Poulenc. **829 616**

Producing oestrone sulphate salt compounds. Parke, Davis & Co. **829 618**

2-Methyl-8-phenyl-nonen-(7)-one-(4) and a process for the mannufacture thereof. Hoffmann-La Roche & Co., AG., F. **829 620**

Phosphate additives for liquid petroleum hydrocarbon compositions. Esso Research & Engineering Co. **829 337**

Separation of n-paraffins from hydrocarbon oils. Edeleanu GmbH. [Addition to 822 549.] **829 540**

Producing mixed fertilisers and products thereof. Lummus Co. [Divided out of and addition to 829 489.] **829 490**

Steroids. Merck & Co. Inc. [Divided out of 829 679.] **829 680**

Open to public inspection 9 March

Storage of granular materials. Stewart Bros. (London) Ltd., and Smithson, W. W. **830 132**

Production of regenerated cellulose filaments. Courtaulds Ltd. **829 869**

Photo-sensitising dyestuffs, a process for their manufacture, and products containing them. Farbwerke Hoechst AG. **829 877**

Oil gas process and apparatus. Gas Machinery Co. **829 878**

Glass compositions. Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny & Cirey S.A., Des. **829 774 & 829 775**

Fungicidal compositions. Pittsburgh Coke & Chemical Co. **829 879**

Steroids and the preparation thereof. Upjohn Co. **829 903**

Methods of providing a contact on silicon. Philips Electrical Industries Ltd. **830 080**

Stilbene triazoles. Farbenfabriken Bayer A.G. **829 788**

Storage of liquefied gases under pressure. Leroux, R. **830 171**

Alicyclic lactones and a method of preparing them. Protiva, M., and Jilek, J. O. **830 082**

Continuous production of hardenable synthetic resin condensation products. Elbel, K. **829 953**

Refining liquid melts, by degasifiction and apparatus for carrying such processes into effect. Fischer, A. G. G. **829 777**

Merocyanine dyes. Ilford Ltd. **829 790**

Derivatives of thiaxanthene. Merck & Co. Inc. **829 763**

Production of coated, impregnated or bonded fibrous sheet material. Farbenfabriken Bayer AG., and Freudenberg Komm.-Ges. Auf Aktien C. **830 088**

Methods of protecting graphite surfaces. General Electric Co. Ltd. **830 005**

Formation of phosphate coatings. Pyrene Co. Ltd. **829 792**

Treating ore fines and product thereof. United States Steel Corp. **830 008**

Hexahydrobenzoate of 19-nor-testosterone. Laboratoires Francais de Chimiotherapie. **830 009**

Transportation of liquefied gases. Esso Research & Engineering Co. **829 915**

Polymerisation of vinyl compounds. Courtaulds Ltd. **830 011**

Thianaphtheno-indols. Ciba Ltd. **830 223**

Phenothiazine derivatives. Farbenfabriken Bayer AG. [Addition to 808 049.] **830 012**

Preparation of a stable dispersion. Industrielle de Resines S.A. **830 013**

Production of polymeric polymethylene terephthalates. Imperial Chemical Industries Ltd. **829 748**

Rigid vinyl halide polymer compositions. Goodrich Co., B. F. **830 226**

Dyes derived from iron complexes of α-nitroso-β-naphthols. General Aniline & Film Corp. **829 917**

Process for the treatment of yarns and threads. Farbenfabriken Bayer AG. **829 917**

Production of thioamides and nitriles. California Research Corp. **829 920**

Treatment of sulphide ore. Rosenquist, T. **830 233**

Pelleting process. Imperial Chemical Industries Ltd., and Glover, H. C., and Mason, W. **830 237**

Detergent tablets. Unilever Ltd. **830 238**

Ammonia still appratus. Koppers Co. Inc. **829 801**

Alcoholates of aluminium and a process for the production thereof. Asta-Werke AG. **829 932**

Benzathiazole amides. Ilford Ltd. **829 832**

Chloroalkylation of aromatic organic compounds. Bergwerksverband GmbH. **830 052**

Detergent preparations. Unilever Ltd. **830 054**

Method for the continuous bleaching or dyeing of cellulose fibres. Smith & Nephew Textiles Ltd. **829 835**

Method of purifying a vapour by separating small entrained particles of liquid therefrom. Badger Manufacturing Co. **830 188**

Manufacture of 2:2¹-dipyridyl. Imperial Chemical Industries Ltd. [Cognate application 35 349.] **829 838**

Dehydrogenation of gaseous hydrocarbons. Farbenfabriken Bayer AG. **829 760**

Pharmaceutical preparations containing imidazole derivatives. Soc. des Usines Chimiques Rhone-Poulenc. **830 195**

DIARY DATES

MONDAY 25 JANUARY

C.S.—Cardiff: Chemistry Dept., University College, Cathays Park, 5.30 p.m. 'Some models of physical adsorption', by Prof. D. H. Everett.

C.S.—Durham: Science Laboratories, South Rd., 5 p.m. 'Reactions in liquid dinitrogen tetroxide', by Dr. C. C. Addison.

Inst. Rubber Ind.—Manchester: Newton Heath Technical College, 6 p.m. 'Developments in preservation and testing of latex', by M. W. Philpott.

TUESDAY 26 JANUARY

C.S. with R.I.C. and S.C.I.—Belfast: Dept. of Chemistry, Queen's University, 7.45 p.m. 'Electron resonance of free radicals', by Dr. D. H. Whiffen.

C.S.—Nottingham: Chemistry Dept., University, 8 p.m. Tilden Lecture, 'Hydrocarbon-metal carbonyls', by Prof. P. L. Pauson.

Fertiliser Soc.—London: Burlington Hse., Piccadilly, W.1, 2.30 p.m. 'New developments in granulation techniques', by P. J. van den Berg and Dr. G. Hallie.

I.Chem.E.—Manchester: Chem. Eng. Dept., University, Jackson St., 6.30 p.m. Research papers dealing with 'Rotating band and spinning band high vacuum distillation'.

Inst. Plant Eng.—Cardiff: South Wales Engineers' Institute, Park Place, 7.30 p.m. 'Safety in uses of industrial gases and equipment', by M. T. Reeks.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6.30 p.m. 'Polymerisation and copolymerisation of itaconic acid and its derivatives', by Dr. J. F. Buckley.

S.C.I.—Birmingham: Birmingham and Midland Institute, 6.30 p.m. 'Continental technical institues; their origins and relation to industry', by Dr. J. Horne.

Soc. Instrument Tech.—London: Mansion Hse., 26 Portland Pl., W.1, 6.30 p.m. Symposium on flame failure detection.

WEDNESDAY 27 JANUARY

R.I.C.—Slough: College of Further Education, William St., 7 p.m. 'Non-aqueous solvent systems', by Dr. C. C. Addison.

S.C.I.—Falkirk: Lea Park Rooms, 7.30 p.m. 'Chemistry and criminal investigation', by Det.-Inspector J. K. McLellan.

THURSDAY 28 JANUARY

C.S.—Bangor: Dept. of Chemistry, University College, 5.45 p.m. 'Synthesis and dissolution of starch in plants', by Prof. Helen K. Porter.

C.S.—Liverpool: Dept. of Inorganic and Physical Chemistry, University, 5 p.m. Tilden lecture, 'Progress in the study of heterogeneous catalysis', by Prof. C. Kemball.

R.S.—London: Burlington Hse., W.1, 4.30 p.m. Ordinary meeting.

Soc. Instrument Tech.—Grangemouth: 'Ellurym' Restaurant, Newlands Rd., 7 p.m. 'Computer control of a continuous process plant', by Elliott Bros. Ltd.

FRIDAY 29 JANUARY

C.S.—Cambridge: University Chemical Labs., Lensfield Rd., 8.30 p.m. 'Structure of myoglobin', by Dr. J. C. Kendrew.

C.S.—Newcastle upon Tyne: Chemistry Dept., King's College, 5.30 p.m. 'Activation of carbon-carbon double bonds by cationic catalysts', by Prof. A. G. Evans.

C.S.—Southampton: Chemistry Dept., University, 5 p.m. 'Homogeneous catalytic activation of molecular hydrogen', by Prof. J. Halpen.

I.Chem.E.—Manchester: Midland Hotel, 3.30 p.m. Annual meeting, dinner and dance, 7 p.m.

R.I.C.—Brighton: Technical College, 6.30 p.m. 'Opportunities in chemistry: (*a*) 'educational', by Dr. J. H. Skellon; (*b*) 'industrial', by Dr. N. Booth.

S.A.C.—Glasgow: Grosvenor Restaurant, 72 Gordon St., 1.45 p.m. Scottish section a.g.m. 'Work of the general chemist', by Dr. D. W. Kent-Jones.

S.A.C.—London: 'The Feathers', Tudor St., E.C.4 6.30 p.m. Discussion meeting.

S.C.I.—Plymouth: Technical College, 5.30 p.m. 'Lubrication', by Dr. R. T. Mathieson.

Soc. Instrument Tech.—Glasgow: Building Centre, Sauchiehall St., 7.15 p.m. 'Computer control of a continuous process plant', by Elliott Bros. Ltd.

SATURDAY 30 JANUARY

S.A.C.—Manchester: Nag's Head Hotel, Lloyd St., 2.15 p.m. A.g.m. 'Analytical methods in clinical biochemistry', by H. Varley.

TRADE NOTES

More Polythene from I.C.I.

I.C.I. Plastics Division are to increase polythene production by approximately 15% in 1960, bringing the annual output to about 105,000 tons. Also new I.C.I. plants in India and Australia, and increased production in France and Germany will release more polythene for home distribution.

Formaldehyde Adhesives

An illustrated booklet describing 'Aerolite 300' and its various applications has been produced by CIBA (A.R.L.) Ltd., of Duxford, Cambridge.

Antifreeze Kite Mark

The first kite mark licence under B.S.I.'s new antifreeze standards, B.S. 3150, 3151 and 3152 covering three types of corrosion-inhibited ethenediol antifreeze for water-cooled engines, has been granted to Smith Brothers and Co. (Chemicals) Ltd., Marshgate Lane, Stratford, London, E.15.

Lower Instruments Price

Increased sales have permitted J. W. Towers and Co. Ltd., Victoria House, Widnes, to reduce price of their model 5 sliding weight balance to £9 17s 6d.

Molybdenum Lubricant

The lubricating media based on molybdenum disulphide and the various grades and uses of the material are fully described and illustrated in a booklet available from K. S. Paul (Molybdenum Disulphide) Ltd., Angel Lodge Laboratories, Angel Road, London N.18.

Styrene Price Down

Ceiling price of monomeric styrene manufactured by Forth Chemicals Ltd. is being reduced by £5 a ton from 15 January. A previous reduction of this material from the firm was announced last March.

Polypenco Plastics

A new publication issued by Polypenco Ltd., 68-70 Tewin Road, Welwyn Garden City, Herts, contains brief details of properties and applications of the various engineering plastics produced and stocked by the firm.

Extensions for Marchon

Extensions covering about 6,000 sq. ft. are proposed to the Whitehaven (Cumberland) chemical factory of Marchon Products Ltd.

P.T.F.E. Adhesive Tape

Adhesive-backed p.t.f.e. tape is now available from the fluorocarbons department of A.E.I. Radio and Electronic Components Division. The material has very useful adhesive properties when applied cold. The bond strength can be increased if, after application, the assembly is heated to about 200°F for 20 minutes. To obtain maximum bond strength an additional five minutes' heating at 300°F is required. Resistance to acids and alkalis is good, but the adhesive is affected by most organic solvents.

U.K. Resin Agents

'Exsud' South American Minerals and Products Co. Ltd., 26 Cowcross Street, London E.C.1, have been appointed sole distributors in the U.K. for Kunstharsfabriek Synthese N/V, Katwijk Aan Zee, Holland, manufacturers of synthetic resins. The range includes alkyd resins, epoxy ester resins, styrenated alkyd resins, pure phenolic resins, modified phenolic resins, maleic resins, cyclohexane resins, and urea resins.

Tubes, Valves and Joints

A colour folder is available from R. Blackett Charlton and Co. Ltd., Manor Works, Newcastle-upon-Tyne, 1, which contains a description of the firm's expansion joints for tankers, precision valves for oil, chemical and marine use, in addition to tube fabrications and non-ferrous castings.

New Service Depot

A new service depot for London and the Home Counties has been opened at Barking, Essex, by the British Materials Handling Division of The Yale and Towne Manufacturing Co. Ltd., Wednesfield, Wolverhampton, Staffs, providing an immediate spare parts service for Yale industrial truck users.

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The proprietor of British Patent No. 757698, entitled "AERATING APPARATUS AND METHOD PARTICULARLY FOR FROTH FLOTATION PROCESSES", offers same for licence or otherwise to ensure practical working in Great Britain. Inquiries to Singer, Stern & Carlberg, 14 E. Jackson Blvd., Chicago 4, Illinois, U.S.A.

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